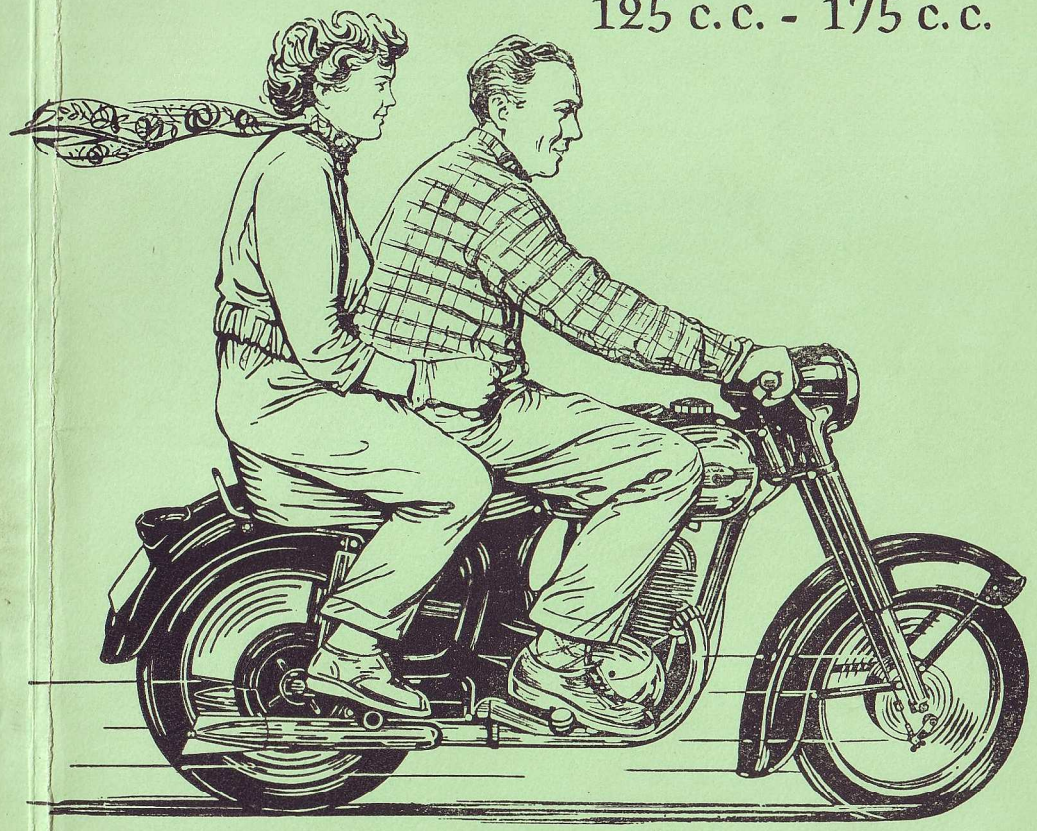
II. EDITION 1957

THE NEW MOTORCYCLE

JAWA

125 c.c. - 175 c.c.



SPECIFICATIONS AND OPERATOR'S MANUAL

WITH SPECIAL REFERENCE TO SERVICING AND ROUTINE MAINTENANCE

THE NEW

125 c. c. Model 355 - 175 c. c. Model 356

MOTORCYCLE

SPECIFICATIONS AND OPERATOR'S MANUAL
WITH SPECIAL REFERENCE TO SERVICING AND
ROUTINE MAINTENANCE

MODEL	125 c. c.	175 c c.
Number of cylinders	1	1
Swept volume	123,2 c. c.	171,7 c. c.

MOTOKOV

Praha - Czechoslovakia

EDITION: 1956

GENERAL INDEX

LIST OF ILLUSTRATIONS

PREFACE

The experts, designers and craftsmen of our motor-cycle works have constructed for you this new model of the world's most up-to date design in order to provide you with both full riding comfort and a motor-cycle easy to handle under all circumstances. It is a perfect machine the modern design of which fully guarantees superior performance, full riding comfort and a smart appearance. We feel sure that this new model will meet all your requirements.

This manual will help you to become acquainted with your machine and to acquire the necessary knowledge of its components and their operation. It will advise you on minor repairs and maintenance. Follow the instructions carefully. We wish you many thousands of pleasant and joyful miles on your new motor-cycle.

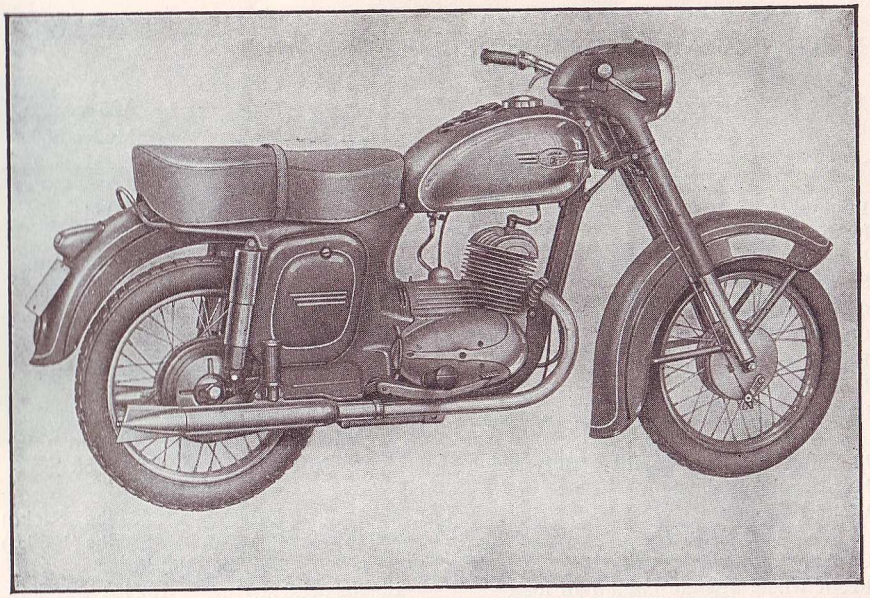


Fig. 1. RH side view of the JAWA-ČZ machine

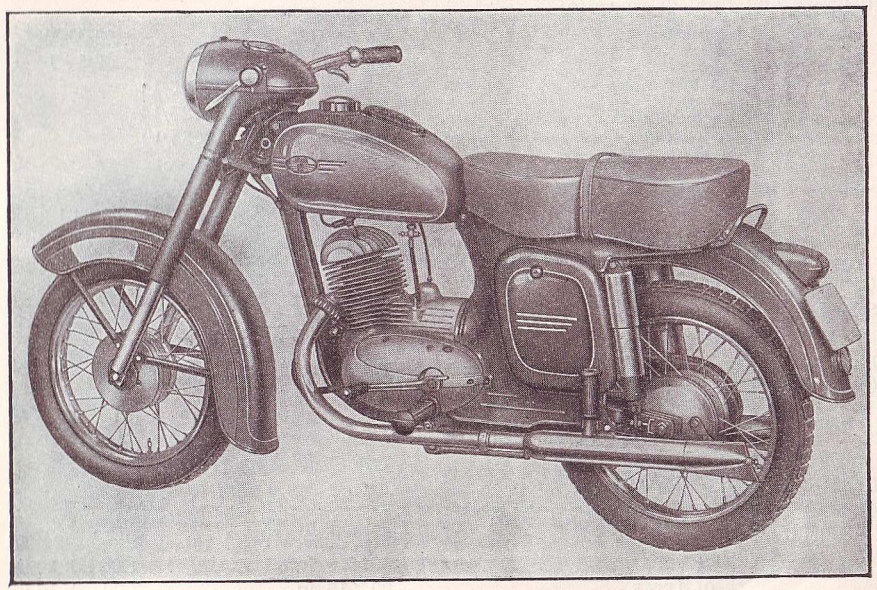
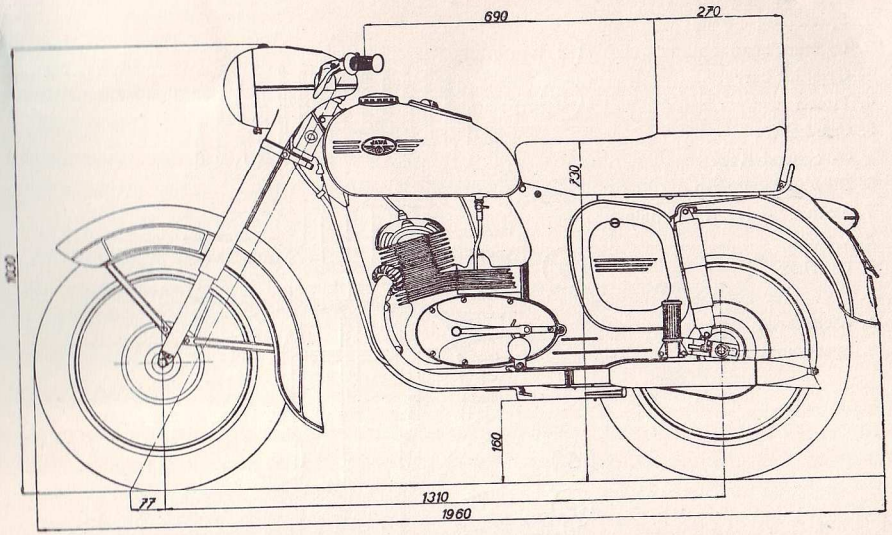


Fig. 2. LH side view of the JAWA-ČZ machine

I. SPECIFICATIONS AND RIEDERS MANUAL

1. TECHNICAL DATA

	125 c. c. Model 355	175 c. c. Model 356
Engine	Two-stroke, air-cooled	
Number of cylinders	1	1
Bore	52 mm	58 mm
Stroke	58 mm	65 mm
Cylinder capacity	123,2 c. c.	171,7 c. c.
Compression ratio	7 to 1	7 to 1
Engine output	5,6 BHP	8,0 BHP
Fuel tank capacity	2,9 galls (13 litres)	
Maximum speed	47 m. p. h. (75 km p. h.)	56 m. p. h. (90 km p. h.)
Maximum climbing ability (fully laden)	37 %	38 %
Motorcycle dimensions	Fig. 3	
Weight — dry	247 lbs (112 kg)	254 lbs (115 kg)
— incl. fuel	269 lbs (122 kg)	276 lbs (125 kg)
Carrying capacity (payload)	331 lbs (150 kg)	
Front wheel spindle maximum load	180 lbs (81,5 kg)	182 lbs (82,5 kg)
Rear wheel spindle maximum load	420 lbs (190,5 kg)	424 lbs (192,5 kg)
Primary drive by 3/8 X 3/8 in. chain	54 links	54 links
Final drive by 1/2 X 5/16 in. chain	117 + 1 links	119 + 1 links
Primary and final drive ratio:		
Primary	40/21 T	40/21 T
Final	47/14 T	47/16 T
Bottom gear	24/13 X 23/14	
Second gear	19/18 X 23/14	
Third gear	16/21 X 23/14	
Top gear	1/1 direct	
Overall gear ratios: Bottom gear	19,380 to 1	16,82 to 1
Second gear	11,205 to 1	9,61 to 1
Third gear	8,150 to 1	7,00 to 1
Top gear	6,400 to 1	5,59 to 1
Overall kickstarter ratio	3,04 to 1	
Speedometer drive ratio	4/13 T	4/11 T
Internal expanding brakes	dia 140/35 mm	
Braking distances from 25 m. p. h. (40 km p. h.)		
front wheel brake	101,05 ft (30,8 m)	
rear wheel brake	101,05 ft (30,8 m)	
both brakes applied	52,53 ft (15,4 m)	
Front fork maximum stroke	130 mm (5,12 in.)	
Pivoted rear fork maximum stroke	100 mm (3,93 in.)	
Carburetter	Jikov 2920 TŘ	Jikov 2924 TŘ
Wheels — size of rims	1,60 X 16 in.	1,85 B X 16 in.
size of tyres	3,00 X 16 in.	3,00 X 16 in.



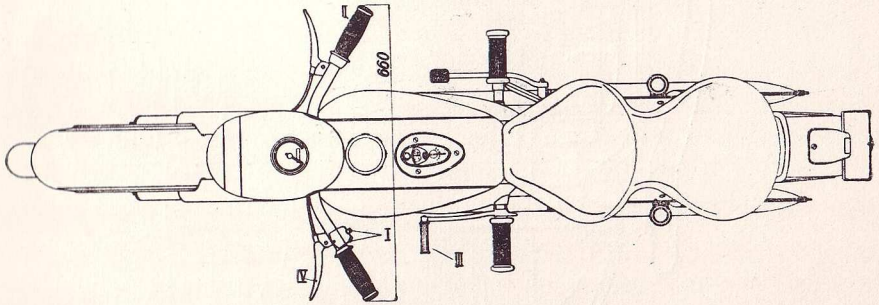


Fig. 3. Machine dimensional drawing

Engine sectional view

1. Spark plug
2. Cylinder head
3. Cylinder barrel
4. Piston
5. Crankshaft — conrod Assy
6. Flywheel magneto
7. Primary drive with chain
8. Clutch
9. Gearbox
10. Foot gear change
11. Kickstarter
12. Speedometer drive

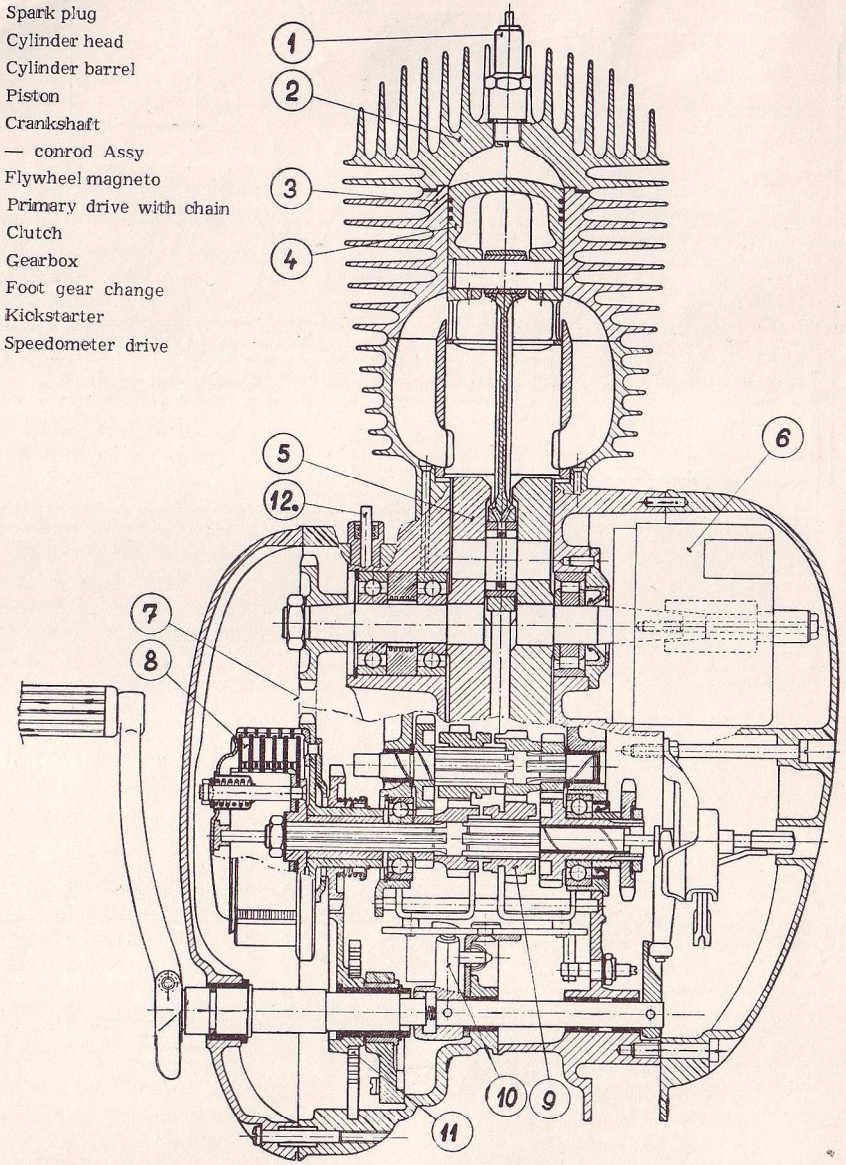


Fig. 4. Engine — sectional view

2. DESCRIPTION OF MOTOR-CYCLE

The 125 c. c. — model 355 and 175 c. c. — model 356 are solo motor-cycles suitable for carrying one or two persons. They are of light weight, sturdy construction and very smart appearance.

The **power unit** is a two-stroke, air cooled petrol engine with inverted scavenging. The engine has a quiet run, well balanced within its range of revolutions, without vibration, and is capable of lively acceleration.

The **clutch** is a five-plate friction clutch, fitted with cork lined steel plates running in an oil bath. Clutch control is effected by means of a hand lever on the L. H. side of the handlebars.

The gearbox is of the four-speed type, forming a monoblock engine unit with the crankcase.

The **gear shifting** is foot operated by means of a lever located on the L. H. side of the engine. The gear change mechanism is fitted with an electric tell tale bulb indicating the neutral position. When changing gear the declutching is automatic. The power transmision is effected by means of **chains**. The primary chain is enclosed by the L. H. crankcase cover and runs in an oil bath. The final drive (secondary) chain is fully enclosed: this arrangement makes the chain last much longer.

The **carburetter** is a „JIKOV" — model 2920 TŘ on the 125 c. c. and a model 2924 TŘ on the 175 c. c. It is concealed in the crankcase, enclosed by the carburetter cover. The model 2920 TŘ choke diameter is 20 mm (the model 2924 TŘ choke diameter is 24 mm). The main jet for the 125 c. c. is 85 (for the 175 c. c. 95—100).

The **spoke wheels** are easily detachable — both the front and rear wheel spindles being of the knock-off type. The rear wheel is connected to the chain wheel by means of a splined driving dog. There are 36 spokes per wheel, the spoke diameter is 0.122 in. (3.1 mm), the thread M 3.5.

The rear wheel brake is operated with right foot, the **front wheel brake** with the right hand. Both brakes are highly efficient and can be adjusted without tools. The **frame** is built up from square section welded tubes with a pivoted rear fork. The **fuel tank** (capacity 2.9 galls — 13 l) is a sheet steel pressing. It is fitted with a filler cap dia 60 mm (2.36 in.), a strainer and a fuel tap with fuel filter.

It has an emergency fuel reserve of approx. 1¾ pts (1l).

The motor-cycle is equipped with a comfortable foam-rubber **dual-seat.** Together with the rear suspension it offers a superior ride to both rider and passenger. The dual seat is hinged and covers an auxiliary box for a spare tube, tyre inflator and spare parts.

The **footrests** are of the sports type and adjustable.

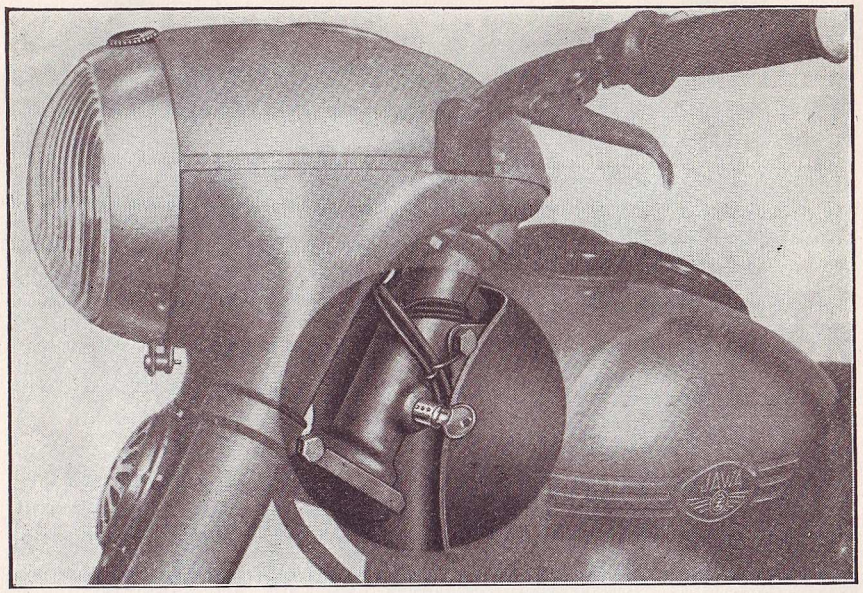


Fig. 5. Motorcycle steering lock

The **handlebars** are of 22 mm (55/64 in.) outer diameter and 670 mm (26 3/8 in.) width. They are of one piece and adjustable.
The **front suspension** is effected by a telescopic fork with hydraulic dampers. It is of the straight slider type with two cylindrical coil springs. The suspension elements are protected by steel cover tubes. The damper liquid capacity 100 c. c. (6.1 cu. in.) per leg.
The **rear suspension** operates on a circular path. The pivoted rear fork is sprung by two cylindrical coil springs and fitted with hydraulic dampers. The suspension dampers are protected by chromium plated steel covers. The damper liquid capacity is 65 c. c. (4 cu. in.) per damper.
The motor-cycle can be **locked** by means of a safety lock, located in the opening on the steering head L. H. side, after turning the handlebars to the right (Fig. 5).

3. DESCRIPTION OF ELECTRICAL EQUIPMENT

Ignition is by dynamo and battery. The **dynamo** is D. C. of the six-pole type 45 W, 6 V.

The **dynamo stator** is secured to the crankcase by two M 6 studs. On the dynamo there is fitted the **contact breaker** which can be rotated (for ignition timing), the **voltage regulator**, the terminal base, brushes and condenser.

The **dynamo rotor** is fitted on the crankshaft and held by a bolt together with the cam controlling the contact breakers.
The **voltage regulator** with an automatic switch is an appliance which keeps the voltage constant and switches the battery current to the dynamo current. The battery is charged by the surplus current generated by the dynamo. Inexpert manipulation of the regulator must be avoided and the manufacturers do not guarantee either dynamos or regulators the regulator contacts of which have been tampered with.
The 7 AH, 6V battery, lead with electrolyte, diluted with sulphuric acid, is located in the L. H. tool box and **connected to the frame with its plus pole. A 15 amp. fuse** is fitted in a case next to the battery.
The **switch box** is built into the fuel tank and distributes the dynamo or battery current to the accessories. It contains a **switch,** ammeter and tell tale bulb indicating the neutral position. The **switch key positions** (Fig. 7) are:

1. Signal horn
2. Head lamp
3. Dipswitch
4. Ignition coil
5. Switch box
6. Fuse
7. Battery
8. Tail lamp
9. Sparking plug
10. Dynamo (on the R. H. side)
11. Neutral tell tale contact base
12. Stop switch (in R. H. side box)

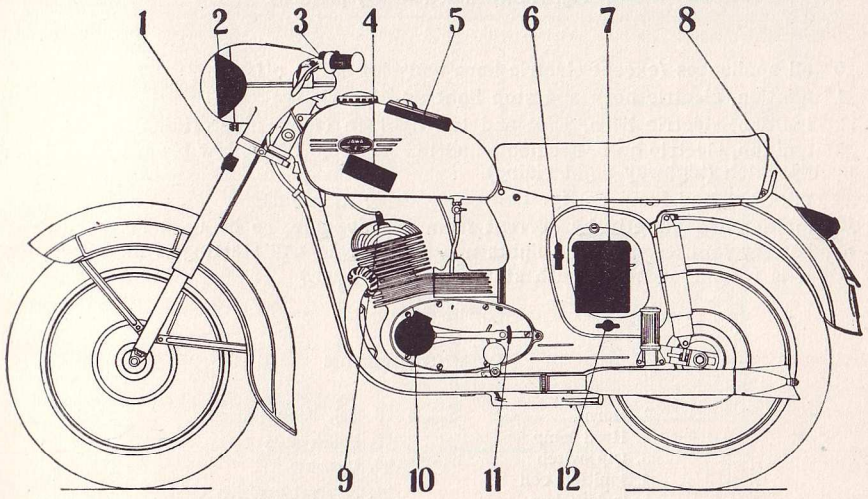


Fig. 6. Electric current consumers

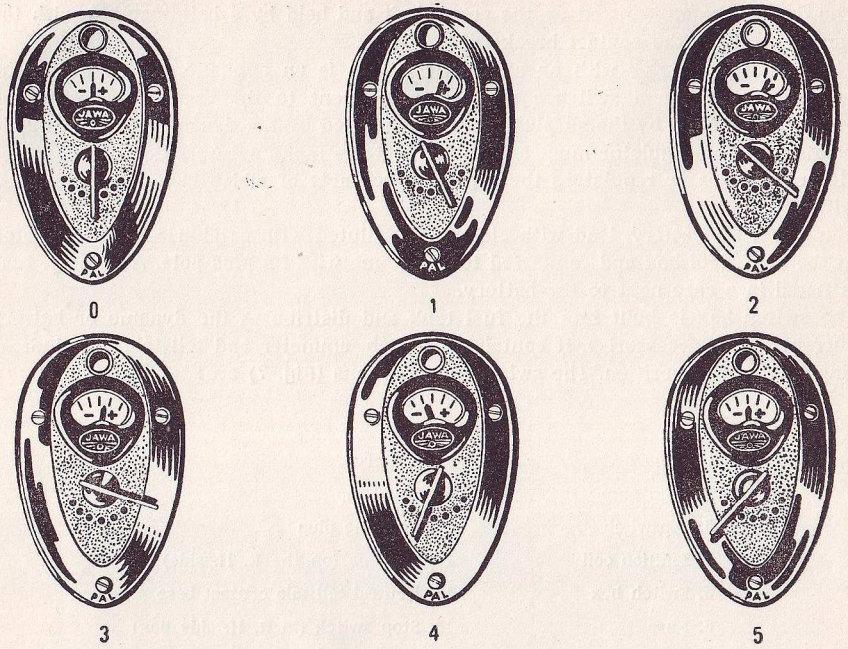


Fig. 7. Switch box — key positions

„0" all appliances (except electric horn and stop light) off
„1" ignition, electric horn and stop light on (day riding)
„2" ignition, electric horn, pilot and tail light on (town night riding)
„3" ignition, electric horn, headlamp and tail lamp on. Dip to low beam by handlebar dipswitch (highway night riding).
„4" pilot and tail lamp on, ignition off (parking at night)
„5" ignition fed directly by current from the dynamo. To be used in the case of battery failure only. (The lights will not operate and starting is more difficult. It is recommended to push start in second gear.)

WIRING DIAGRAM

1. Horn
2. Head lamp
3. Dip switch
4. Ignition coil
5. Switch box
6. Fuse
7. Battery
8. Tail lamp
9. Spark plug
10. Dynamo
11. Neutral position contact
12. Stop lamp switch
13. Horn button

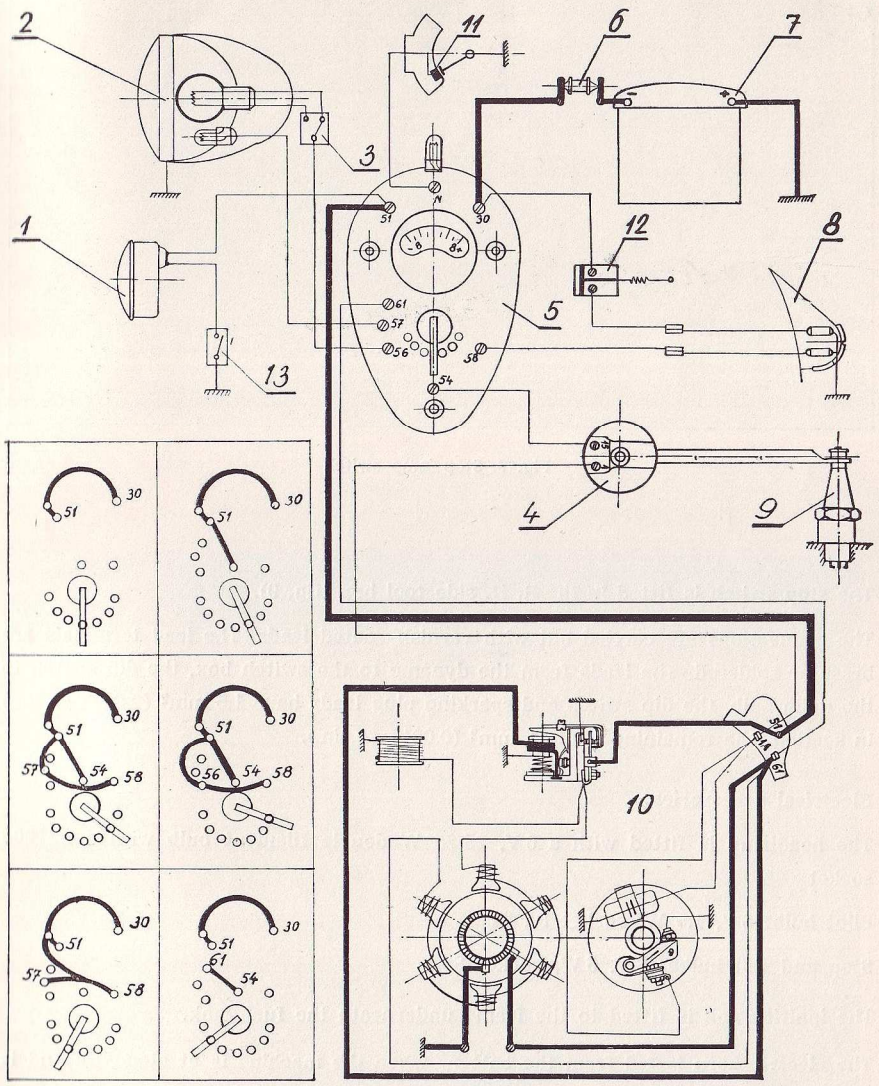


Fig. 8. Wiring diagram

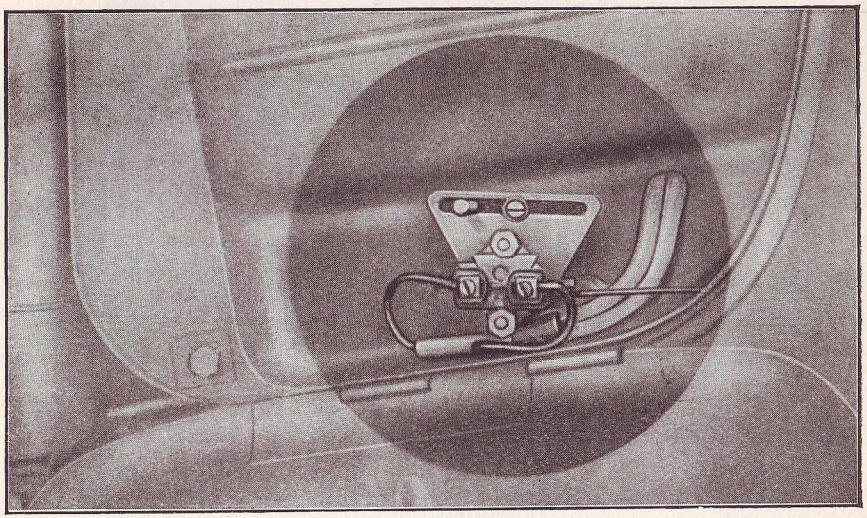


Fig. 9. Stop lamp switch

The **stop switch** is fitted in the R. H. side tool box (fig. 9).

The connections are carried out with varnish coated **leads.** The lead terminals are brass or soldered. The leads from the dynamo to the switch box, the dip switch to the main bulb, the dip switch and sparking plug leads have 1.5 mm² (0.0023 sq. in.) in section, the remaining leads 1 mm² (0.0015 sq. in.).

Electrical accessories:

The headlamp is fitted with a 6 V, 25/25 W **double filament bulb** with a Ba 20d socket.

Pilot bulb: 6 V, 1.5 W, socket Ba 9s.

Stop and tail bulbs: 6 V, 5 W, socket S8.

The **ignition coil** is fitted to the frame underneath the fuel tank.

The **electric horn** is fed from the battery when the machine is at standstill and is operated by means of a push-button on the dip switch.

Sparking plug — for both 125 c. c. and 175 c. c. models — PAL 14/195 when running in, then PAL 225 or 240, depending on the temperature.

5. RUNNING IN A NEW MOTOR-CYCLE

When taking over a new machine and before making the first trip the customer is advised to check the equipment of the motor-cycle as well as the oil level in the gearbox and the liquid in both the front and rear suspension dampers. The oil level in the gearbox can be checked through the oil level inspection hole closed by the oil level screw M 6×8 (Fig. 10). For filling up with oil see Part II, para 2, „Lubricating the motor-cycle".

To check the correct liquid level in the hydraulic suspension dampers depress the front and rear of the motor-cycle in turn as much as possible, release quickly and check the recoil for smooth, bounceless movement. Instead of this, ride for a short distance on a rough road and check the front and rear suspension respectively for bouncing, knocking, noise and rattle. It should be pointed out that the riding comfort

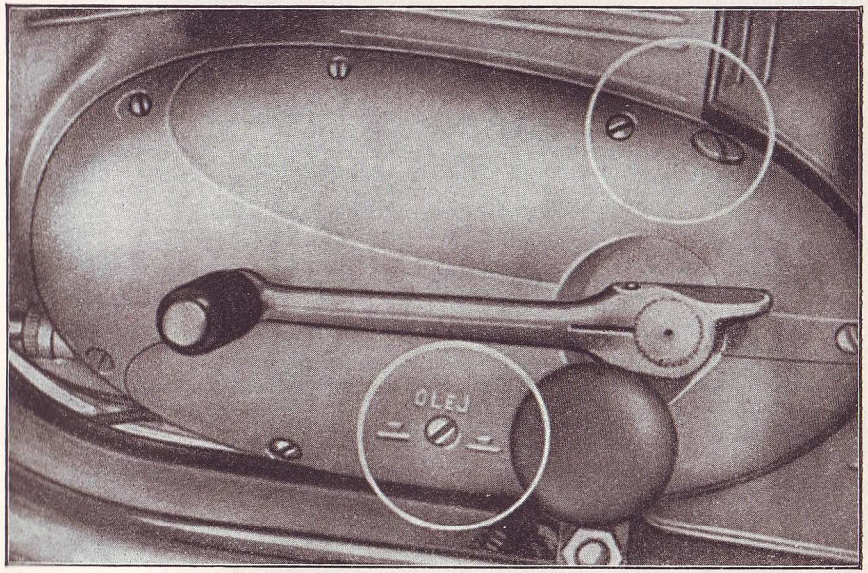


Fig. 10. Gearbox oil level inspection

on this type of motor-cycle depends above all on the proper operation of the hydraulic dampers the precise and relatively delicate mechanism of which requires a certain amount of attention. Check and top up the damper liquid according to instructions and, should any defects occur, rectify them as soon as possible.

The new motor-cycle must be run in for about 900 miles (1500 km) before full advantage can be taken of the engine power. Conscientious and careful running in will considerably prolong the life of the components. Therefore, observe the following instructions:

a) Mix petroil in the approved ratio. Before covering the first 600 miles (1000 km), add oil to petrol at a ratio of 18 to 1 up to 900 miles (1500 km) at a ratio of 20 to 1 and after 900 to 1200 miles (1500 to 2000 km) at a ratio of 25 to 1.

b) Before covering the first 300 miles (500 km) do not exceed the following speeds:

In bottom gear	8 m. p. h. (15 km p. h.)
In second gear	22 m. p. h. (35 km p. h.)
In third gear	28 m. p. h. (45 km p. h.)
In top gear	35 m. p. h. (55 km p. h.)

c) Whem slowing down to a stop keep the engine at low revolutions.

d) Check all screws and nuts periodically for slackness.

e) Change the oil in the gearbox after the first 300 miles (500 km). Change the oil for the second time after 900 miles (1500 km). See Part II, para 2 „Lubricating the motor-cycle".

f) After the first 600 miles (1000 km) change the damper liquid in the front fork dampers. See Part II, para 2 „Lubricating the motor-cycle".

6. SERVICING INSTRUCTIONS

A. Before starting.

Make sure there is fuel in the fuel tank. Open the fuel tank filler cap, by turning it anti-clockwise. After running in the motor-cycle, mix oil with fuel at a ratio of 25 to 1 and fill the tank through the strainer.

The fuel tank is fitted with a lever type fuel tap (Fig. 11). This fuel tap ensures an emergency fuel supply for about 20 miles (30 km). Should this fuel reserve be exhausted, tilt the machine to the left, thus bringing the remaining fuel from the R. H. half of the fuel tank into the L. H. half, i. e. to the fuel tap. This last reserve will do for about 2.5 miles (4 km).

Check the tyre pressure. The pressure in the front tyre should be 18 lb. sq. in. (1.25 atm.), in the rear tyre 21 lb. sq. in. (1.5 atm.): when riding with a pillion passenger increase it to 28 lb. sq. in. (2 atm.),

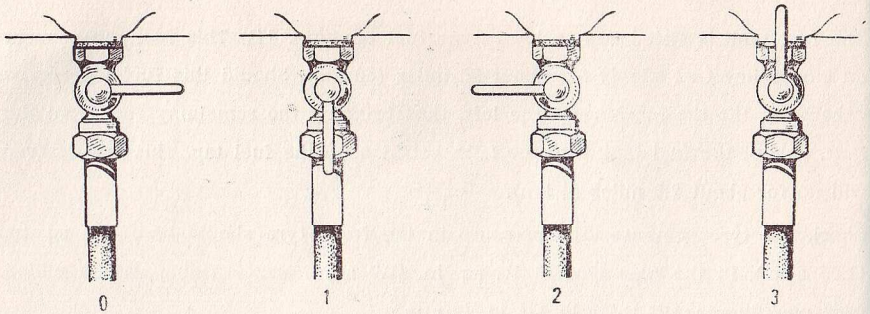


Fig. 11. Fuel tap positions

0 — Fuel supply cut off

1 — Main fuel feed line open

2 — Fuel supply cut off

3 — Emergency fuel feed line open

B. STARTING THE ENGINE.

If the motor-cycle has not been in use for a considerable period the clutch plates may be stuck. It is recommended to test the clutch before starting the engine. Engage the bottom gear, push the motor-cycle and declutch two or three times. When the clutch operation is correct, shift to neutral.

a) Open the fuel tap, close the carburetter air intake by turning the air cleaner strangler and flood the carburetter by pressing down the tickler pin. (Flooding and air intake closing should be carried out only when the engine is cold).

b) Insert the ignition key into the switch box and turn to the corresponding position (Fig. 7). If the battery is in order the ammeter will register a discharge — (minus). If the tell tale „N" (fig. 12) does not light up shift into neutral between the bottom and second gear. Never leave the motor-cycle standing for any length of time with the ignition on as the battery would become discharged and the resistances or ignition coils could suffer damage.

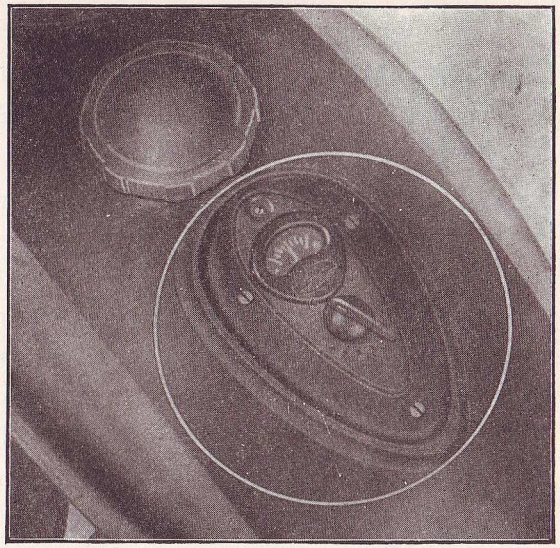


Fig. 12. Neutral position „N" tell tale bulb.

c) With a slight pressure of the foot on the face provided on the gear change lever hub press the lever towards the engine, rotating it at the same time into the starting position. Then start the engine by kicking the starter down. As soon as the engine has started the lever returns automatically to its horizontal position. If required the engine can be started with the gear engaged when the clutch lever has been depressed. It is recommended to start in this manner in cold weather.

C. Riding.

a) Depress the clutch lever fully with your left hand, shift into bottom gear with your left foot by pushing the foot gear change lever upwards and release the clutch lever slowly while simultaneously gradually opening the throttle.

Should the clutch cable be broken the motor-cycle can be started by slowly releasing the gear lever from the upper position. As soon as a speed of 9. m. p. h. (15 km p. h.) is reached close the throttle, push down the gear lever with your foot and reopen the throttle.

Engage the other gears in the same manner. When changing down the gear lever should be lifted upwards. It is recommended to declutch at the beginning before you recognize at what speed to change down without declutching.
It is pointed out that between the third and top gear there is an unmarked neutral position. Both neutral positions are engaged by shifting the gear lever half way between the two gears.

b) When slowing down to a stop, close the throttle, declutch, put on the brakes and shift the gear lever into the „neutral position" between the bottom and second gear. Only then release the clutch lever. During short stops (on cross-roads, etc.), shift the gear lever into bottom gear and keep the clutch lever depressed. When braking also use the front brake, but a little later than the rear brake and only when travelling straight on.

D. Operation of the electrical equipment when starting and during riding.

After inserting the key into the switch box with the engine at standstill and after turning the key to position „1", „2", „3", the ammeter will register a discharge — (minus). This signifies that the dynamo is not supplying any current to the electrical accessories and that these are fed from the battery. The „N" tell tale glows if the neutral position between the bottom gear and the second gear is engaged. When the revolutions exceed 1,300 r. p. m., after the engine has been started the ammeter stops registering a discharge, the battery does not discharge, the electrical accessories are fed by current from the dynamo and the battery is charged by the surplus current. If the ammeter does not register a charge + (plus) at high r. p. m. it is necessary to have the electrical equipment examined in a specialist workshop. (Faulty switch or dynamo). If the „N" tell tale bulb is broken or burnt out replace it after removing the switch box cover.

7. WHAT TO AVOID

To let the engine race while it is standing is harmful as it is not being cooled. Do not keep it declutched for any considerable time as the cork inserts of the clutch plates would be subject to unnecessary wear. Never help the engine uphill by letting the clutch „slip", but change down in good time: do not ride for long with bottom gear engaged.

II. MAINTENANCE

1. CLEANING THE MOTOR-CYCLE

The smooth lines of the motor-cycle make it easy to clean. Use plenty of water for washing the machine, preferably with a sponge. Wash with paraffin parts that have been soiled with oil and dust. When washing take care not to let water come into contact with the carburetter, headlamp and brakes.

Wipe dry all enamelled and chromium plated parts and polish then with flannel or chamois leather.

The enamelled parts can be polished with an enamel polish.
To remove the water from the cylinder cooling fins, start the engine, the warmth of which will cause the water to evaporate.

Note: Petrol, paraffin and oil dissolve rubber (tyres, handlebar grips, footrests). Consequently protect the rubber parts from contact with the liquids mentioned.

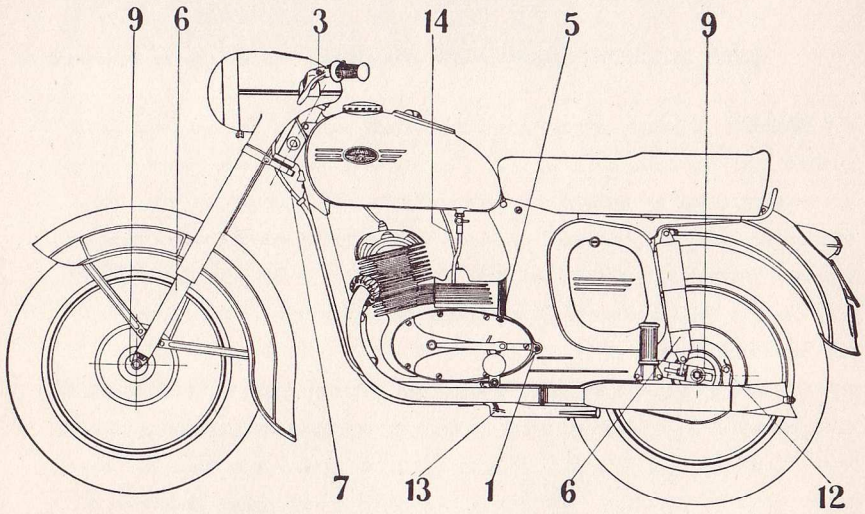


Fig. 13. Lubrication chart — L. H. side

2. LUBRICATING THE MOTOR-CYCLE

The engine is lubricated automatically by adding CASTROL SAE 30 to the fuel at a ratio of 25 to 1.
Fill **the gearbox** in Summer with CASTROL SAE 50, in Winter with CASTROL SAE 20 (approx. 48.82 cu. in. [800 c. c.]) regularly after every 3000 miles (5000 km). Change the oil preferably after having finished a trip while both the engine and oil are warm. The warm oil will scavenge any accumulated sludge. For draining the oil see Fig. 15. Rinse the gearbox with flushing oil in the following manner:
Pour into the gearbox filler neck (Fig. 10 — top arrow) about 550 c. c. (34 cu. in.) of flushing oil and let the engine run at low revolutions for about 2 to 5 minutes (ride a short distance or put the machine on the centre stand). Change to all gears. Drain the flushing oil into a clean container, let the inpurities settle down and pour off the clean oil for use next time. Never use paraffin or fuel oil for rinsing as their remnants would reduce the lubricating capacity of the fresh oil. The correct oil level in the gearbox is determined by the inspection screw (Fig. 10 — bottom arrow). Check the oil level from time to time by unscrewing this screw and, if necessary, top up.

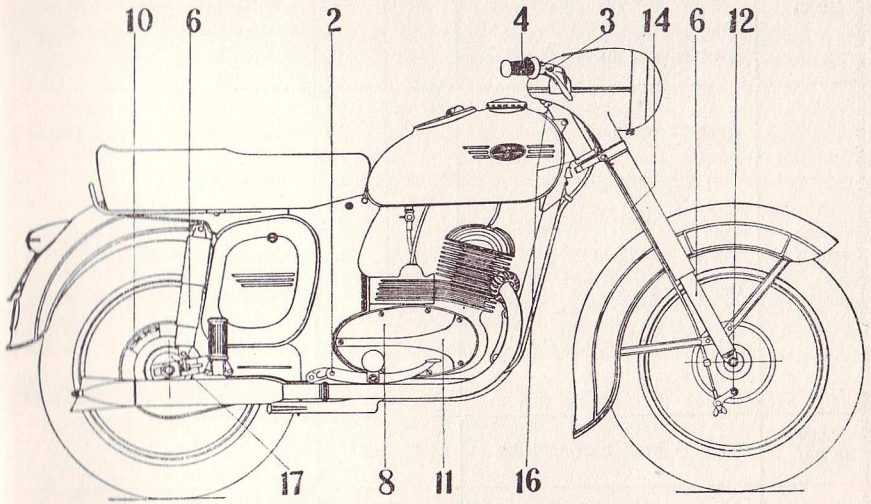


Fig. 14. Lubrication chart — R. H. side

LUBRICATION CHART (Fig. 13, 14).

Miles (km) covered	Lubrication point	Point No	Total	Type of lubricant Hot weather	Cold weather
300 (500)	Pivoted rear fork	1	1	Castrolease grease CL	
	Foot brake pedal pin	2	1	Castrolease grease CL	
	Control lever pins (front brake, clutch)	3	2	Castrol SAE 50	
600 (1000)	Gear box (topping up)	5	1	Castrol SAE 50	Castrol SAE 20
	Front suspension dampers (topping up)	6	2	Castrol shockol	
1200 (2000)	Front suspension dampers (change of oil)	6	2	Castrol shockol	
1900 (3000)	Wheels — bearings	9	2	Castrolease heavy	
	Contact breaker arm pins	11	1(2)	Castrolease heavy	
	Contact breaker felt	11	1	Castrolease heavy	
	Twist grop	4	1	Castrolease grease CL	
	Speedometer drive	7	1	Castrol SAE 50	
3000 (5000)	Gearbox (change)	5	1	Castrol SAE 50	Castrol SAE 20
	Rear (secondary) chain	10	1	Castrolease graphited	
	Brake cams	12	2	Castrol SAE 50	
	Centre stand pin	13	1	Castrolease grease CL	
	Control cables	14	3	Castrolease brake cable grease	
	Rear wheel brake drum bearing	17	1	Castrolease heavy	
5000 (8000)	Steering head bearing balls	16	2	Castrolease heavy	
If necessary	Rear suspension dampers	6	2	Castrol shockol + 40 % paraffin	

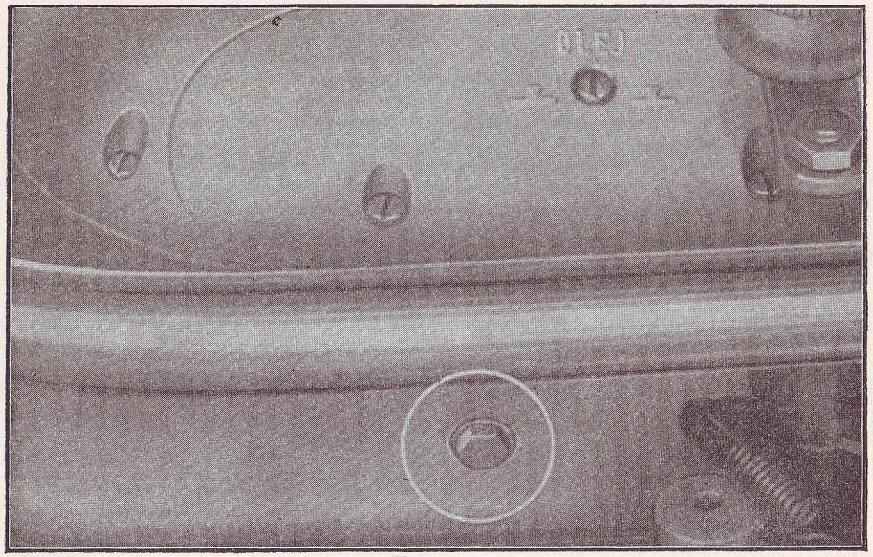


Fig. 15. Draining the oil from the gearbox

The **clutch** runs in an oil bath (oil from the gearbox).

The **telescopic front fork dampers:** After the first 600 miles (1000 km) drain the damper liquid from the front fork after having first unscrewed the drain plug # 10 on the fork slider bottom and filler plug (M 6) on the fork top part (after having removed the reflector — see Part III, para 10). In order to drain the oil completely depress and release the fork several times. After this rinse the damper with petrol and allow it to dry. Before screwing in the drain plug check whether the slider bottom with pin (Ab. 20 — Fig. 52) is in its recess. Having screwed in the drain plug fill the damper with CASTROL SHOCKOL (Fig. 19). The damper capacity is 100 c. c. (6 cu. in.). If no filling pump is available, use a funnel with elbow extension. Should the fork hounce, knock or strike, replenish the liquid. Change the damper liquid (without rinsing with petrol) after 1200 to 1800 miles (2000 to 3000 km). When topping up do not use a different damper liquid than that used originally. The **pivoted rear fork dampers.** Should the pivoted rear fork bounce, strike or leak, top up the liquid. The necessity of topping up depends on the condition of the sealing ring: therefore if it is necessary to top up the liquid it is usually also necessary to replace the sealing ring. To top up or change the liquid (partial dismantling of the damper must be effected) see Part III, para 16).

The **pivoted rear fork** should be lubricated after 300 miles (500 km) with CASTROL-EASE GREASE CL by means of strokes of the grease gun. (Fig. 18.)

The **wheels** (bearings) should be lubricated every 1900 miles (3000 km) with CASTROLEASE HEAVY, using the grease gun. After 3000 miles (5000 km) lubricate the rear chainwheel bearing after partial dismantling (see Part III, para 4, „Removing the rear chainwheel").

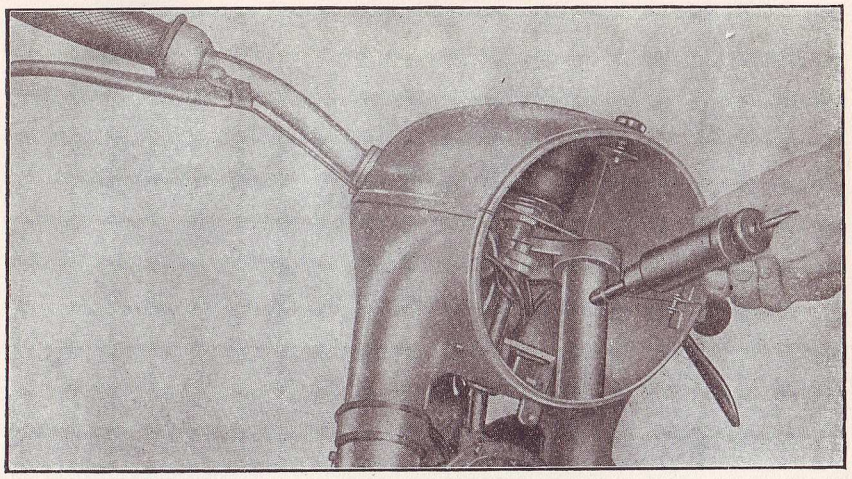


Fig. 16. Filling the front fork damper

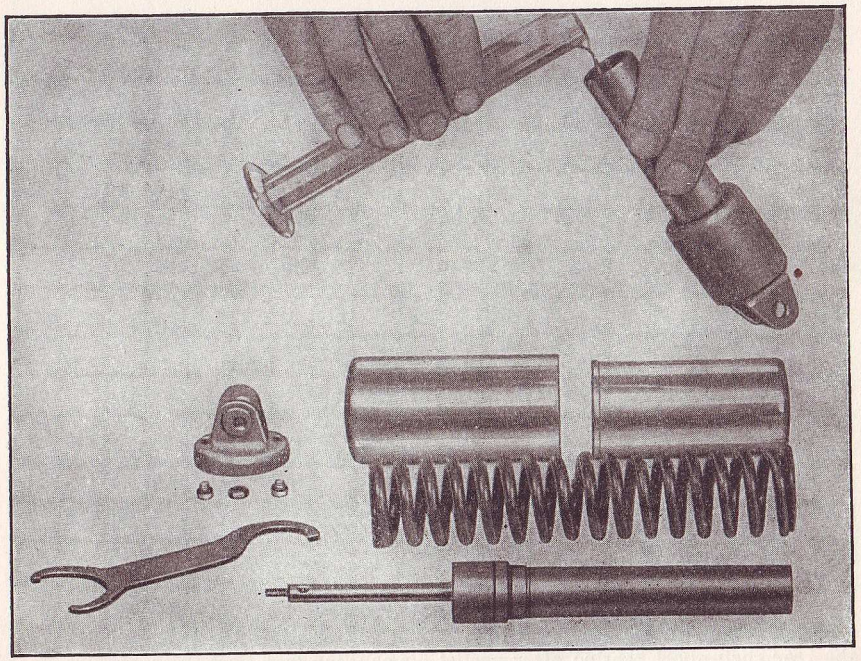


Fig. 17. Filling the rear fork damper

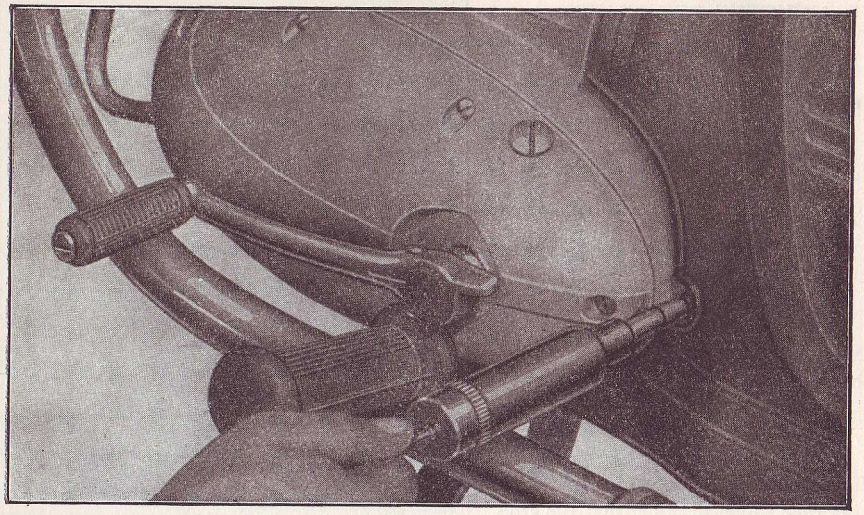


Fig. 18. Lubricating the pivoted rear fork

The primary chain is totally enclosed by the L. H. crankcase cover and runs in an oil bath. It does not require any attention. When worn it should be replaced. When replacing the primary chain the clutch should be dismantled and the engine sprocket pulled off. (It is recommended to have this operation done in a repair shop equipped with suitable tools).

The secondary chain should be serviced after every 3000 miles (5000 km). Having pulled out the chain wash it in paraffin. Let it dry and place it for about three hours in a slightly warm lubricant (CASTROLEASE GRAPHITED).

Warm lubricant penetrates the chain links better. Take out the chain, let the lubricant solidify and after removing the chaincase fit the chain.

See Part III, para 3 — Removing the chaincase, Removing the chain and Assembly.

The **control cables** (clutch, front brake, throttle) should be lubricated after every 1900 to 3000 miles (3000 to 5000 km) with a few drops of oil.

The **twist grip** should be lubricated after every 3000 miles (5000 km) with CASTROL-EASE GREASE CL after removing the twist grip from the handlebars. Unscrew the screw holding the plug in the rubber grip and pull the grip off.

The **speedometer drive** should be lubricated with a few drops of oil after every 1900 miles (3000 km) after removing the headlamp rim with reflector from the headlamp (see Part III, para 10) and disconnecting the speedometer.

The **steering head bearing balls** should be lubricated occasionally with grease (see Part III, para 11), but at least after every 5000 miles (8000 km).

When dismantling the front fork and the rear dampers lubricate the coil springs with CASTROLEASE GREASE CL.

3. ADJUSTING THE BRAKES

The well dimensioned brakes are fully shielded against the penetration of water which would reduce their efficiency. The brakes require only occasional adjustment when the brake shoe lining is worn (excessive brake lever stroke).

The brakes are adjusted by turning the adjuster nuts — the front brake by means of the wing nut, the rear brake by means of the knurled nut. Having adjusted the brakes check the wheels for free rotation. With the rear wheel brake adjust the stop lamp switch — see para 8.

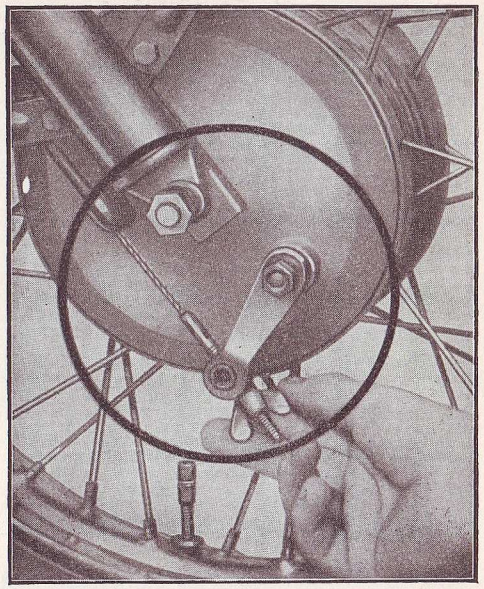


Fig. 19. Adjusting the front wheel brake

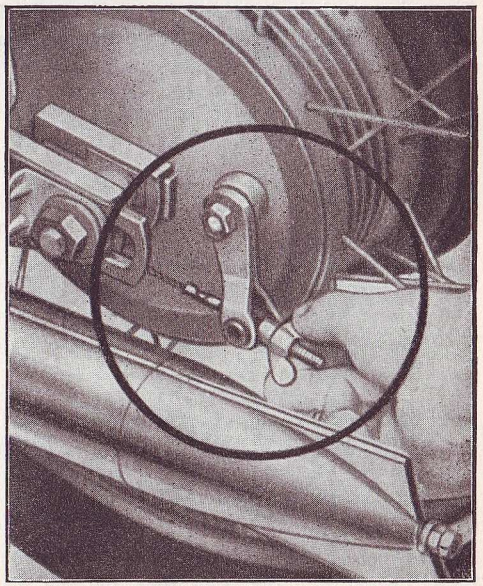


Fig. 20. Adjusting the rear wheel brake

4. TYRES

The life of the outer tyre cover depends on the inner tube air pressure in relation to the load carried. As a rule the tyre should be inflated so as to keep its original shape even under full load. Running on under inflated tyres will result in the cover wall cord threads breaking.

The pressure in the front tyre should be 18 lbs sq. in. (1.25 atm.), in the rear tyre 21 lb. sq. in. (1.5 atm.), with pillion rider it should be 28 lb. sq. in. (2 atm.). It is advisable to check the pressure with the tyre pressure gauge. It is a well known fact that the tyre pressure increases during long rides in hot weather. In cold weather, on snow or icy roads partly under-inflated tyres will be of advantage (for better control of the machine). In addition attention is called to the fact that oil, petrol and strong sunshine are harmful to the tyres. Examine the tyres from time to time and remove any foreign matter, such as sharp gravel, glass, etc., stuck in the tyre tread.

Check the tyre valves for leakage by unscrewing the valve cap and moistening the valve. Should any bubbles appear, the valve is leaky. In such a case tighten the valve core (the slotted valve cap will serve the purpose). Should the valve still leak screw out the valve core and replace it with a new one. It is advisable to keep a couple of valve cores as spares.

A punctured tube should be patched. The tyre cover must be removed in the following manner:

Unscrew the valve core and deflate the tube completely.

Unscrew the nut securing the valve to the rim. Lay the wheel in horizontal position and press the tyre edge well into the rim base at a point **diametrally opposed** to the valve (Fig. 21). Using the tyre levers slip the cover egde over the rim edge (Fig. 22). Take care not to pinch the tube and thus damage it. Having slipped all the cover circumference over the rim edge press the valve completely out of the rim base and remove the tube. Having screwed in the valve core and inflated the tube partially, the punctured spot can best be located by plunging the tube into water. Mark the punctured spot (e. g. with a copying pencil), dry the tube and repair it as follows:

Slightly rub the punctured spot with a piece of sand paper. Smear the rubbed spot with rubber solution. Allow the solution to dry and only then place the patch in position after first removing its protective coating. Press the patch well to the tube, especially at its edges. Powder the patched spot with French chalk (talcum

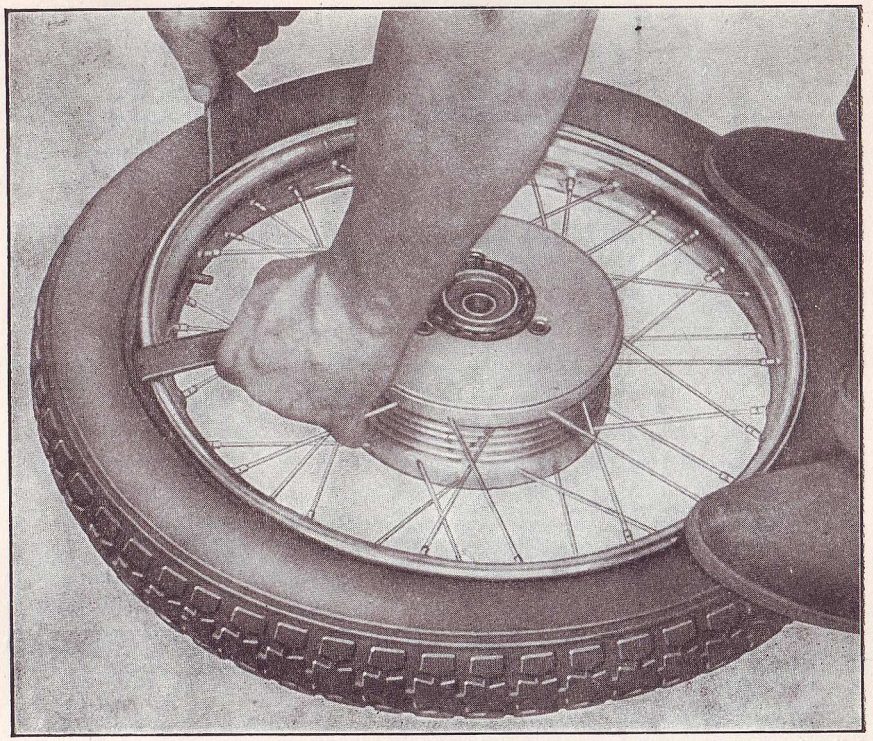


Fig. 21. Correct tyre fitting

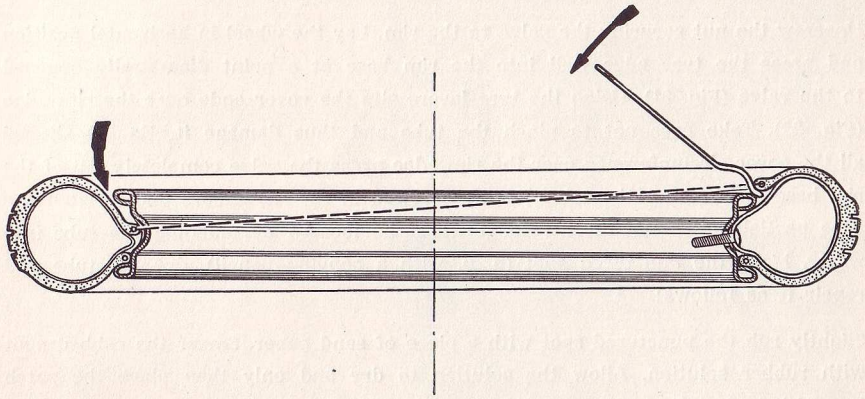


Fig. 22. Rim and tyre — sectional wiew — fitting the tyre cover

powder) to prevent the tube sticking to the inner walls of the cover at the spots where the solution has been smeared. Examine the outer cover carefully and if the nail is still in it, remove it with pliers.

Fitting the tyre:

Partially inflate the tube, insert it into the cover, one edge of which has remained in the rim, push the valve through the rim hole and secure it by means of its nut (do not tighten). Slip on the cover side over the rim edge **beginning opposite the valve**, hold it in the rim base and gradually work both sides towards the valve with the tyre lever. Proced carefully in order not to damage the tube by pinching it between the cover and the rim edge.

Tyre patching is an emergency remedy which should be carried out when a nail punctures the tyre during a trip. For permanent repairs rely on vulcanisation by a repair shop. Rely on the repair shop also for repairing tyres damaged by sharp gravel or glass.

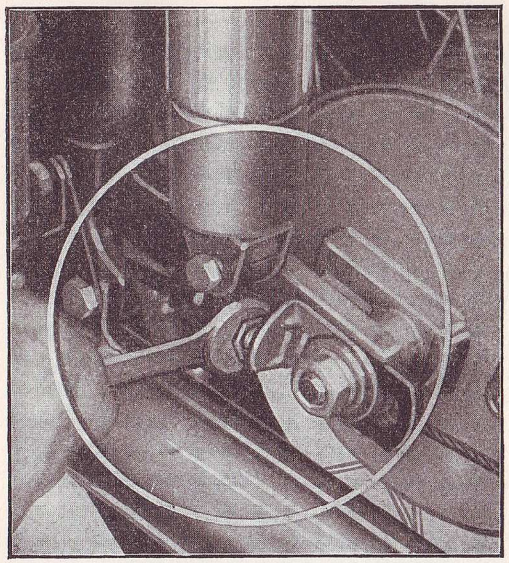


Fig. 23. Adjusting the rear (secondary) chain

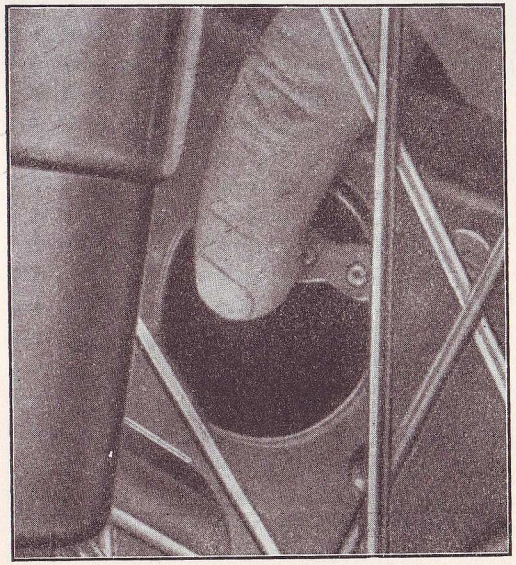


Fig. 24. Chaincase lid.

5. ADJUSTING THE CHAIN (Fig. 23).

Slacken the rear wheel spindle, i. e. the spindle securing nut (# 24) and the rear chainwheel hub securing nut (# 32) (tap the spindle slightly as well as the hub securing nut). Then slacken the chain tensioning front lock nuts (# 14) and tighten the rear adjuster nuts evenly. Never use force when tighteniing these nuts so as to avoid damaging their threads. Having adjusted the chain tension, retighten the tensioning locknuts properly (# 14), then the rear chain-wheel hub securing nut (# 32) and finally the spindle securing nut (# 24).

Make sure that the wheels are in line, adjust the rear brake as well, for having moved the rear wheel the brake might not operate correctly, and check the stop switch. Check the chain tension after every 600 miles (1000 km). Remove the chain-case lid (Fig. 27) and depress the chain. The free movement should not exceed 3/4 in. (2 cm).

6. ADJUSTING THE CLUTCH

If it is found when riding that the clutch slips, the fault can generally be rectified by turning the automatic clutch adjusting screw (in the R. H. cover opening) by 1/6 or 2/6 to the left. It is recommended to adjust the hand and automatic declutching more accurately from time to time in the following manner (Fig. 26):

a) Slightly screw in the hand declutching adjusting screw (2), thus releasing the clutch lever.

b) Clean any dirt from the cam (6) of the automatic declutching and the clutch roller (5) with petrol and paraffin.

1. Foot gear change lever
2. Clutch
3. Clutch operating rod with thrust washer
4. Clutch operating rod
5. Clutch control carrier
6. Ball
7. Clutch hand lever
8. Automatic clutch adjusting screw
9. Automatic clutch roller
10. Automatic clutch cam
11. Cup

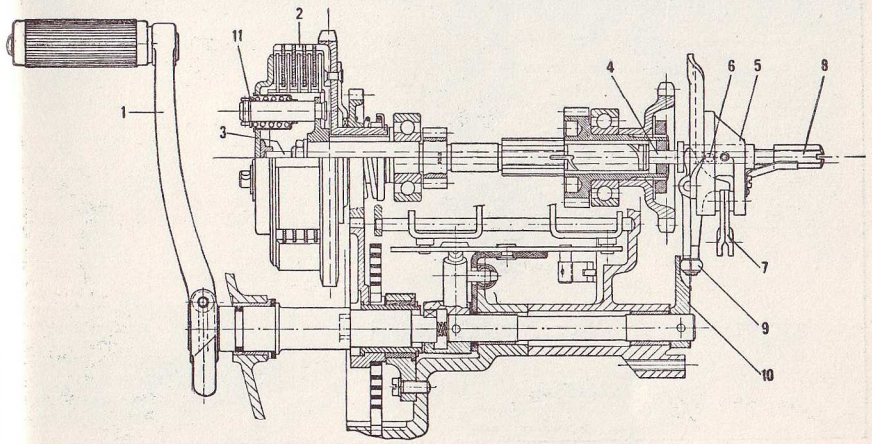


Fig. 25. Clutch operation (automatic) diagram

c) With your left hand take hold of the automatic declutching roller (5) and move it towards the cam and back.

d) If there is any movement, turn the automatic clutch adjuster screw (4) to the right until the space between the roller (5) and cam (6) is approx. 0.1 to 0.3 mm.

e) Adjust the hand declutching by means of the hand declutching screw (2) so that the handlebar clutch lever has a little free movement.

f) Smear both the automatic clutch cam (6) and the roller (5) lightly with grease.

1. Hand control cable
2. Hand clutch control adjusting screw
3. Control cable securing screw
4. Automatic clutch adjusting screw
5. Automatic clutch roller
6. Automatic clutch cam

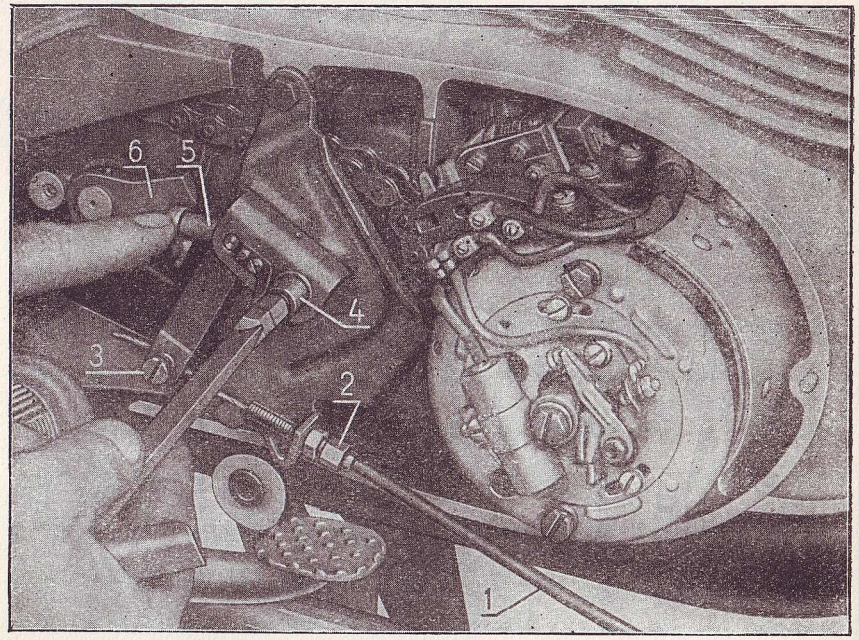


Fig. 26. Adjusting the clutch

7. CARBURETTER JIKOV 2920 TŘ, 2924 TŘ

The carburetter (Fig. 27) has been correctly set in the works. The jet and throttle valve have been selected by trial. Therefore no adjustment is required, except cleaning from time to time.
To start the engine easily the idling speed should be set correctly. This is done by means of the pilot air screw (4). To obtain a poorer mixture, unscrew it, while to obtain a richer mixture, screw it in. With a poor mixture the engine is difficult to start, has a tendency to back fire, heats up and loses output. The exhaust pipe acquires a slight colour tint. Too rich a mixture manifests itself by heavy engine running and dark smoke coming out of the exhaust pipe, while the inside of the carburetter becomes black and the mixture gets thrown backwards. The idling

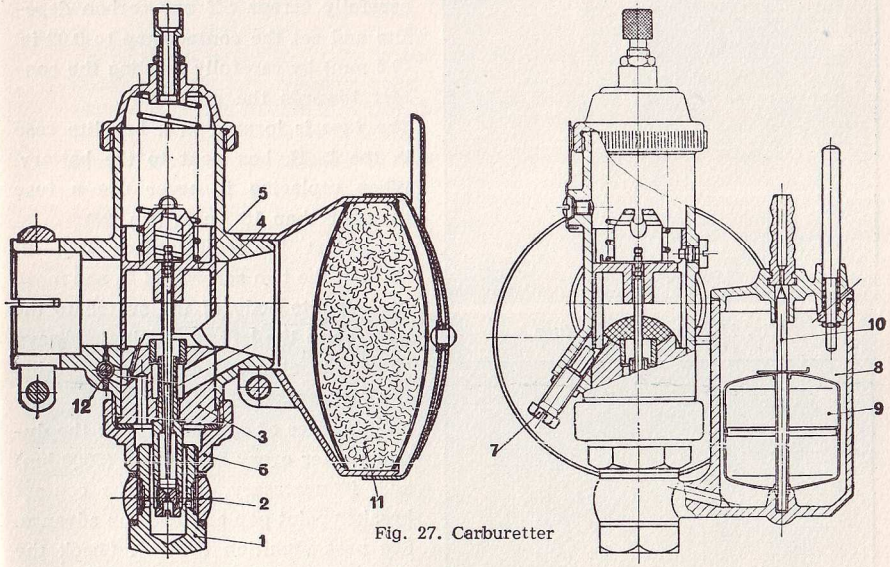


Fig. 27. Carburetter

1. Holding bolt witch screen
2. Main jet
3. Jet block barrel
4. Throttle valve
5. Throttle valve needle
6. Mixing chamber union nut
7. Throttle valve stop screw
8. Float chamber
9. Float
10. Float needle
11. Air cleaner
12. Pilot air screw

speed of the engine (with fully closed throttle) can be adjusted by extending or shortening the throttle cable and by securing the throttle valve, not letting it down to its bottom limit, with the throttle valve screw (oblique screw located on the carburetter body side). This screw must never be completely unscrewed.
To clean the carburetter dismantle it and wash the parts in clean petrol. Replace damaged or worn parts. The idling speed passages should be cleaned by passing a fine horse hair through them. Never use wire or hand tools to clean the jet as this might damage the delicate jet hole. From time to time remove the air cleaner (11) and wash the element in clean petrol. After cleaning pour a mixture of oil and petrol at a ratio of 1 to 1 through the element. When assembling take care that the float chamber is perpendicular to the carburetter body and that the tickler pin has a free passage in the cover hole.

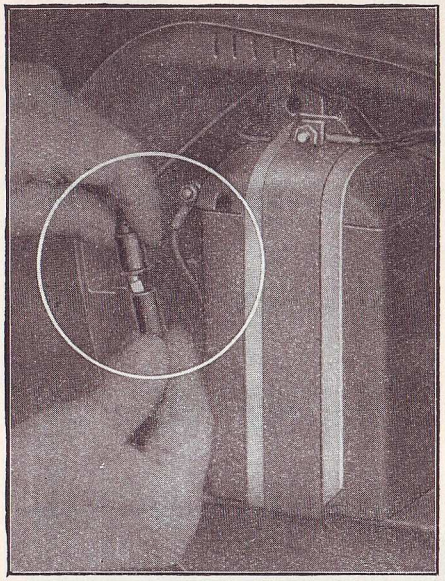


Fig. 28. Removing the fuse

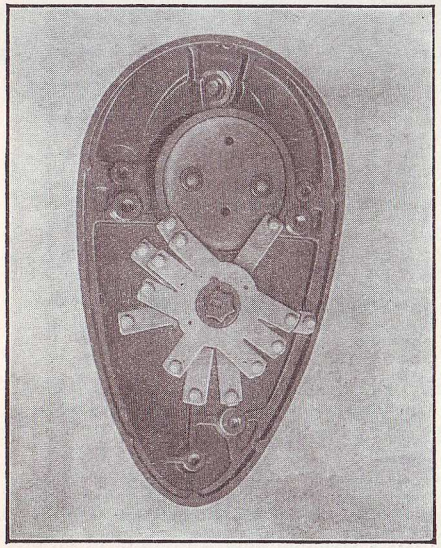


Fig. 29. Ignition and light switch basic position

8. MAINTENANCE OF ELECTRICAL EQUIPMENT

Examine the **leads** periodically and wind insulating tape round any crack in the insulation. Damaged insulation can cause short circuits possibly entailing serious damage to the battery. Clean the **sparking plug** periodically, carefully scrape off any carbon deposits and set the contact gap to 0.02 in. (0.5 mm) by carefully bending the contact towards the plug body.

The **fuse** is located in a bakelite case in the L. H. box next to the battery. When replacing it never use a fuse stronger than 15 Amps (fig. 28).

To adjust the **stop switch** (Fig. 9) slacken the two screws (M 4) and move the bakelite body of the switch to the right or to the left as required. Always check the stop switch after adjusting the rear brake.

Maintenance of dynamo: Check the dynamo after every 3000 miles (5000 km) and, if necessary, adjust the contact breaker point gap and ignition advance. See para „Ignition timing". Check the brushes for wear after every 6000 miles (10.000 km). If the brushes are lower than $^{5}/_{16}$ in. (8 mm), replace them. If there is no free movement in the brush holders they need cleaning. Remove the brush holders and clean them with petrol. Never file the friction surfaces of the brushes and take care when reassembling to put them back as they were originally. Clean the collector with a cloth dipped in petrol. Any major repairs to the dynamo should be carried out by a specialized repair shop.

Setting the ignition advance:

a) Remove the sparking plug from the cylinder and insert or screw a gauge into the sparking plug hole (indicator with thread M 14×1.25, a special feeler gauge or a straight piece of wire).
b) Find the T. D. C. of the cylinder by rotating the crankshaft to the right (direction of rotation of the running engine).
c) In this position set the contact breaker point gap by means of the adjusting screw. Measure the gap with the feeler gauge (Fig. 30) supplied with the tools. The thinner feeler should pass between the points while the thicker one must not do so.
d) By rotating the crankshaft to the left (in the opposite direction) bring the piston down by 3.8 to 4 mm on the 125 c. c. and by 4 mm on the 175 c. c.
e) Check the contact breaker point gap again in this position, it should not exceed 0.05 mm (0.0019 in.). Use the feeler gauge or a piece of cigarette paper, both of which should be a sliding fit.
f) Should the gap be smaller or larger, slacken the two screws securing the contact breaker base plate to the dynamo stator and restore the correct gap to 0.05 mm (0.0019 in.) by rotating the base plate to the right (the gap decreases) or to the left (the gap increases).
g) After setting, retighten the screws.

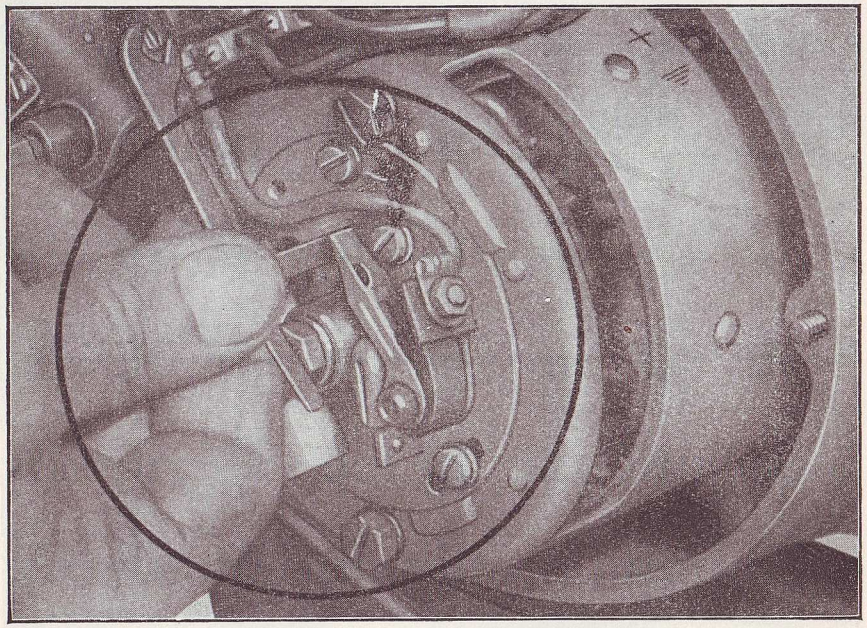


Fig. 30. Gauging the contact breaker point gap.

Battery: Maintan the electrolyte level (it should by above the plates and separators in all the cells), its density and keep the battery charged. Check the electrolyte level at least once a fortnight. Add distilled water if no acid has been spilled: if it has been spilled top up with properly diluted sulphuric acid. Top up if possible before a trip and do not leave a freshly filled battery standing longer than 10 hours. Have the electrolyte density checked every 3 months in a specialized workshop (30 to 32° Bé, specific gravity 1.26 to 1.285). The correct density is important for proper charging and to protect the battery from freezing.

Battery discharge	Spec. gravity of electrolyte	Freezing point
1/4	1.24	— 40° F (— 40° C)
1/2	1.23	— 22° F (— 30° C)
3/4	1.185	— 4° F (— 20° C)
Dead	1.14	— 14° F (— 10° C)

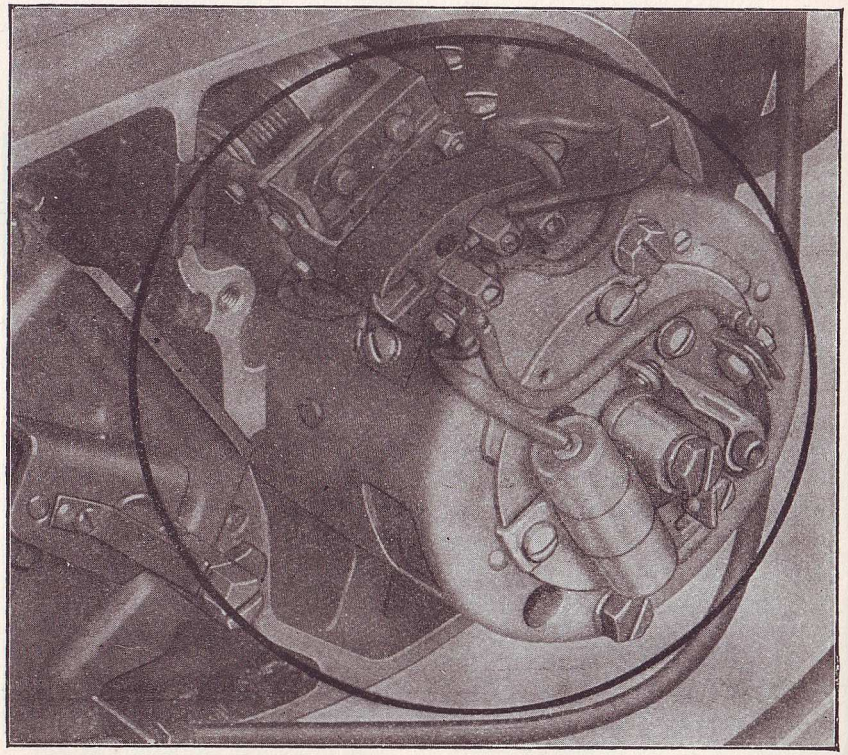


Fig. 31. Dynamo

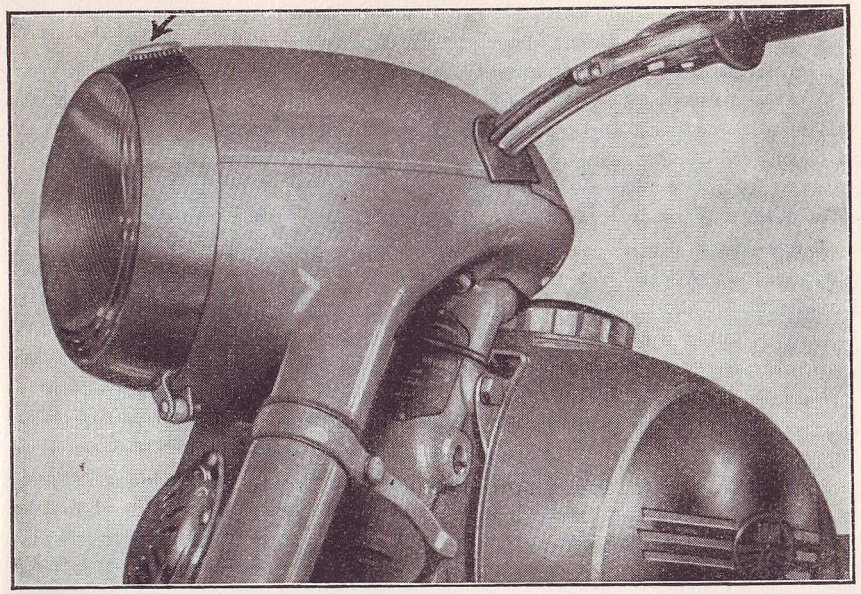


Fig. 32. Adjusting the headlamp beam

If the motor-cycle is not used for any length of time, e. g. during the Winter, remove the battery, store it in a dry place and give it as much care as you would if it were in operation, i. e. check it, top up with distilled water and recharge it. It is advisable, at least every two months, to discharge it by one half down to 1.8 V per cell and recharge it to its full capacity using 0.5 Amp current on both occasions.

When fitting the battery to the motor-cycle connect its **plus pole to the frame.** A wrongly connected battery would result in the fuse burning and in demagnetisation of the dynamo. Keep the battery terminals clean. A light grease coating will protect the terminals from corrosion by the acid.

9. DECARBONISATION

It is advisable to remove carbon deposits after every 3000 to 6000 miles (5000 to 10.000 km) for dismantling see Part III, para 7). Burnt fuel residues (carbon deposits) cause a drop in the engine output as well as excessive heating of the engine.

Remove the carbon from the piston, cylinder head and exhaust ports by careful scraping. At the same time remove carbon deposit from the piston ring grooves (preferably with an old piston ring). When replacing the piston rings fit the rings into the same grooves in which they were before being removed. Having scraped off the carbon, polish the parts in question, and before reassembling, wash them in clean petrol or paraffin.

After every 6000 miles (10.000 km) remove the exhaust silencers (Fig. 33) and clean them with a wire brush. (After the silencers have been removed they can be soaked in petrol and „burnt out". In view of the obvious danger carry out this operation in the open.)

Do not enlarge the holes in the silencer cores as any modification would influence the engine output and fuel consumption.

10. CHECKING OF SCREWS AND NUTS.

After having covered about 300 miles is necessary to check and re-tighten all screws and nuts, namely:

1. Screws fastening the engine in the frame.
2. Nuts of the steering head column.
3. Screws fastening the rear fork suspension to the frame.

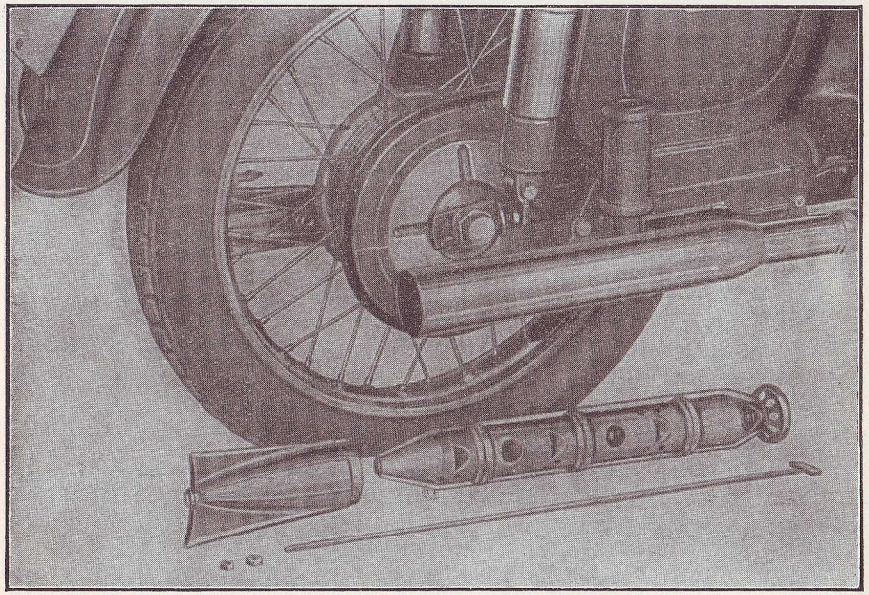
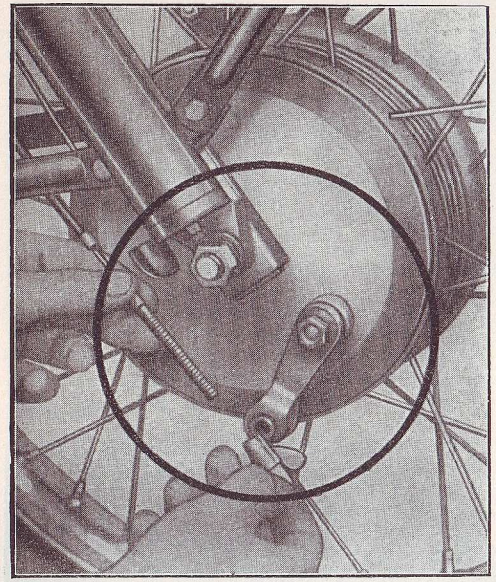


Fig. 33. Removing the exhaust silencer

III. DISMANTLING AND ASSEMBLING WITHOUT THE AID OF SPECIAL TOOLS



1. REMOVING THE FRONT WHEEL

Slacken the brake cable (Fig. 34). unscrew the spindle nut (# 19) and remove the spring washer. Slacken the pinch bolt (# 14) on the L. H. plunger bottom end. Push out the spindle and remove the wheel.

Fig. 34.
Disconnecting the front brake

When assembling, after pushing home the spindle, putting the spring washer into position (it must not be forgotten!) and placing the locknut (# 19) in position, fully depress the front fork several times. Only then tighten the locknut and L. H. plunger bottom end with the bolt (# 14). Check the suspension again. Fit the brake cable and adjust the brake so as to enable free rotation of the wheel.

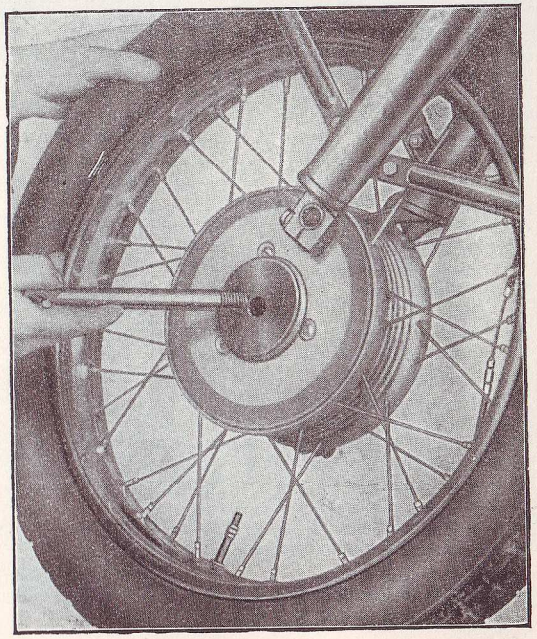


Fig. 35. Removing the front wheel

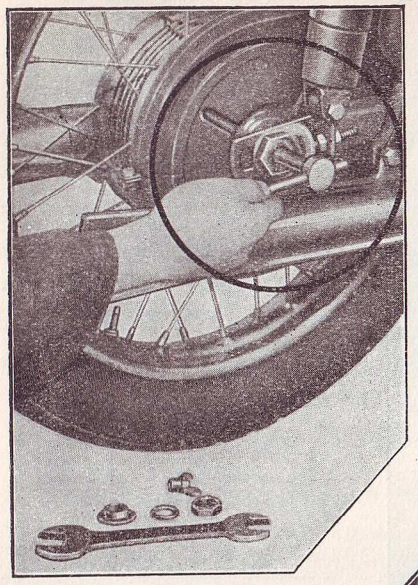


Fig. 36.
Removing the rear wheel spindle

2. REMOVING THE REAR WHEEL

Slacken the rear brake cable, unscrew the nut (# 24), remove the spring washer, loosen the rear wheel spindle, push it out to the R. H. side (Fig. 36). On the L. H. side remove the brake bracket, slide the wheel off the driver splines and, having inclined the motorcycle to the R. H. side, remove the wheel (Fig. 37).

When reassembling, push home the spindle, replace the spring washer (do not forget!), screw on and tighten the nut properly. Fit the rear brake cable and adjust the brake. Check also the stop switch.

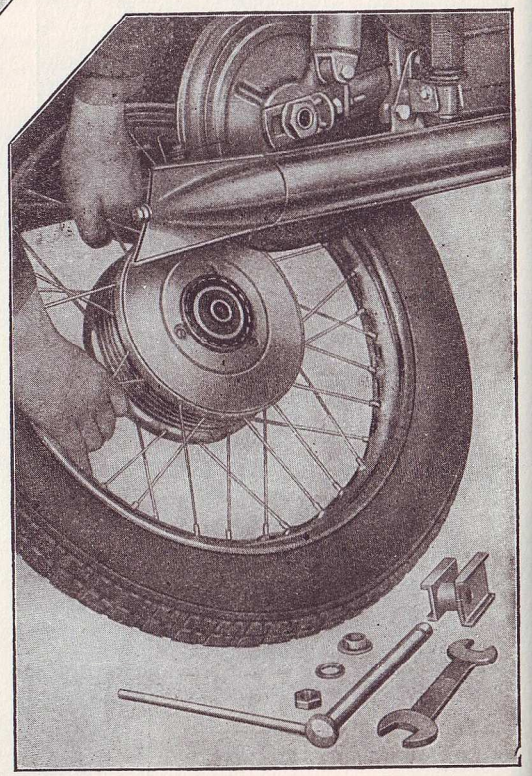


Fig. 37.
Removing the rear wheel

3. REMOVING THE CHAINCASE AND THE CHAIN

To facilitate the dismantling of the chaincase, remove the rear wheel and the R. H. crankcase cover. Disconnect both chaincase halves (Fig. 38) and pull them apart. Rotate the chain till the chain connecting link is on the rear chainwheel, loosen the clip with pliers or a screwdriver (Fig. 39) and remove the chain connecting link. Pull out the chain and pull both crankcase cover halves in turn rearwards. When reassembling proceed as follows: full the disconnected chain on the secondary wheel and fasten a piece of wire to each chain end. Using the wire pull the chain through the rubber sleeve in the bottom half of the chaincase cover and push the cover back into position. Pull the chain on the rear chainwheel and secure it by means of the wire. Using the other wire, pull the other chain end through the rubber sleeve in the top half of the chaincase cover and push the cover back into position. Pull the chain on the rear chainwheel, connect both chain ends with the connecting link and the clip. The chain connecting link clip should face with its cutting opposite the direction of the chain rotation. Fit the rubber seal between the chaincase halves, fasten the cover halves with a bolt and nut and secure them with a circlip. When replacing the chain it is not necessary to dismantle the chaincase completely. Fasten the new chain to the old one and by means of the old one pull the new chain into position.

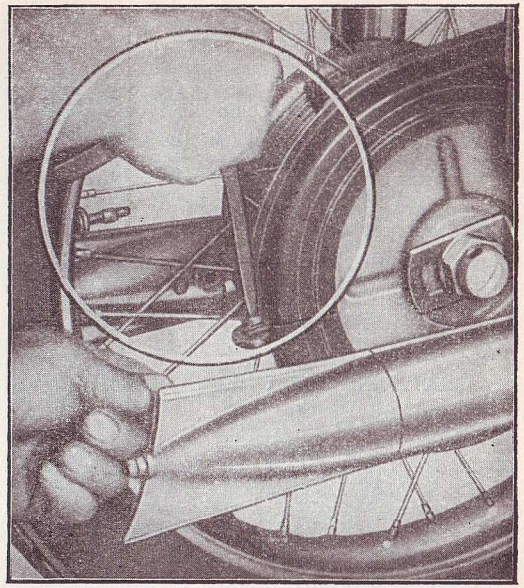


Fig. 38. Dismantling the chaincase

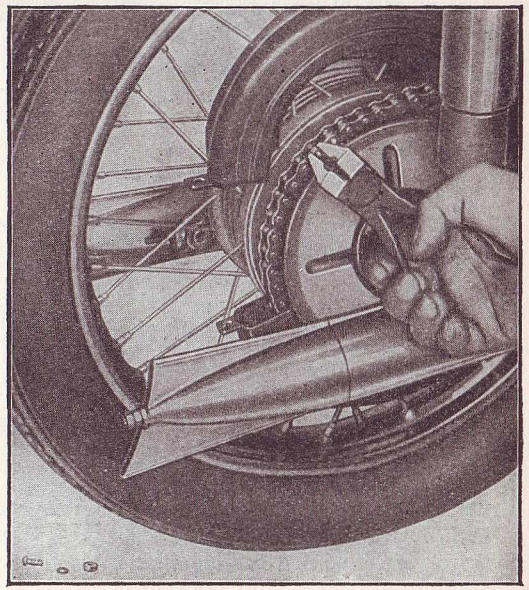
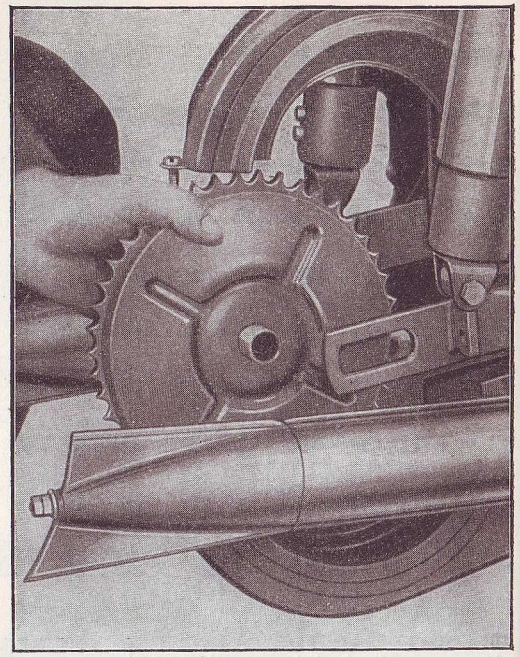


Fig. 39. Disconnecting the chain

4. REMOVING THE REAR CHAINWHEEL

To remove the rear chainwheel take off the rear wheel and the chaincase. Unscrew the rear chainwheel nut (# 32) and push out the rear chainwheel together with the chromium plated plate. (Fig. 40.)



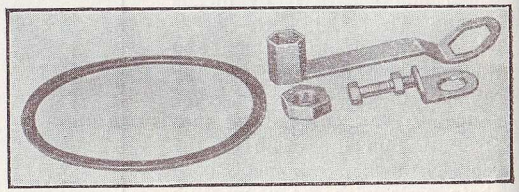


Fig. 40. Removing the rear chainwheel

5. REPLACING THE WHEEL BALL BEARINGS

Remove the brake drum back plate with brake shoes. Remove the oil seal rings on both sides of the wheel hub and on the side of the splined driver take off the ball bearing circlip. Using a piece of tube push the other bearing from the opposite side until the unlocked bearing falls off. The remaining bearing can be pushed out to the opposite side and the distance sleeve taken out. The most suitable dimensions of the pushing out tube are dia 24/16×50 mm. Warning: before dismantling the front wheel ball bearings the light alloy cover of the splined driver should first be removed (Fig. 41).

Press in the new bearings by applying pressure to the outer bearing race, preferably using a piece of tube dia 40/32×25 mm. If use is made of piece of a tube of smaller diameter and if the inner bearing race is tapped, or if pressure is exerted, the bearing can be damaged. Take care when reassembling to place the bearing caps towards the wheel exterior.

When replacing the ball bearing in the rear chainwheel first take off the plate and push out the distance sleeve. From the R. H. side of the rear chainwheel take off the oil seal ring and bearing circlip. Using a tube dia 30/26×50 mm push out the bearing from the side of the splined driver. Press in the new bearing using a tube dia 50/42×15 mm. (Fig. 43).

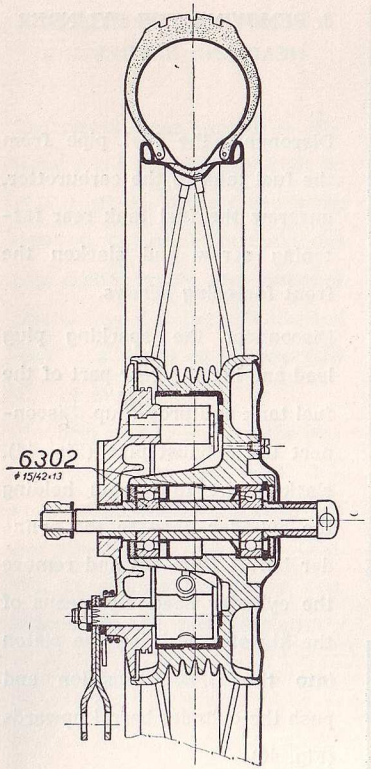


Fig. 41. Frontwheel — sectional view

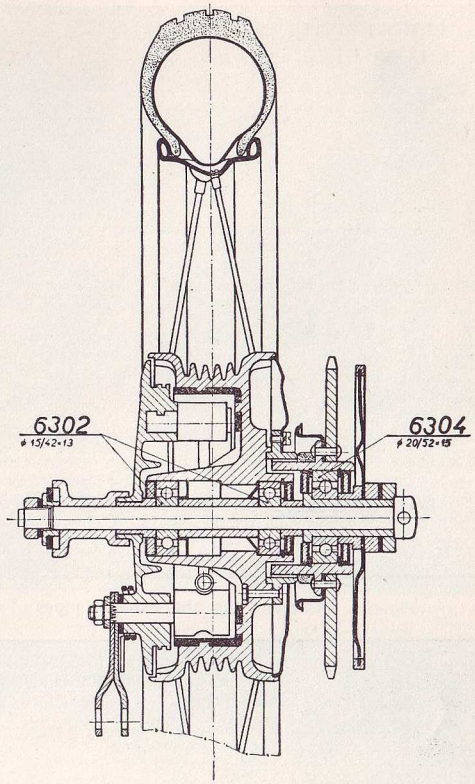


Fig. 42. Rear wheel — sectional view

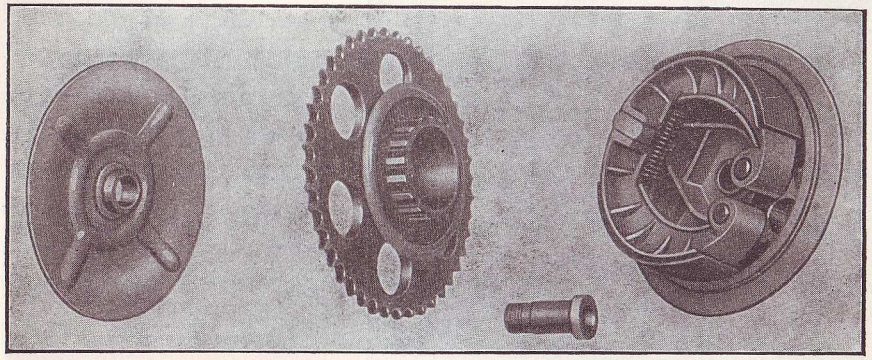


Fig. 43. Components of the rear chainwheel and the rear brake

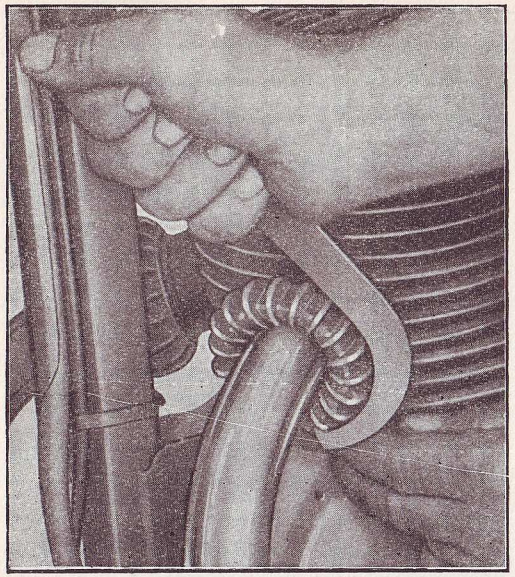


Fig. 44. Disconnecting the exhaust pipes

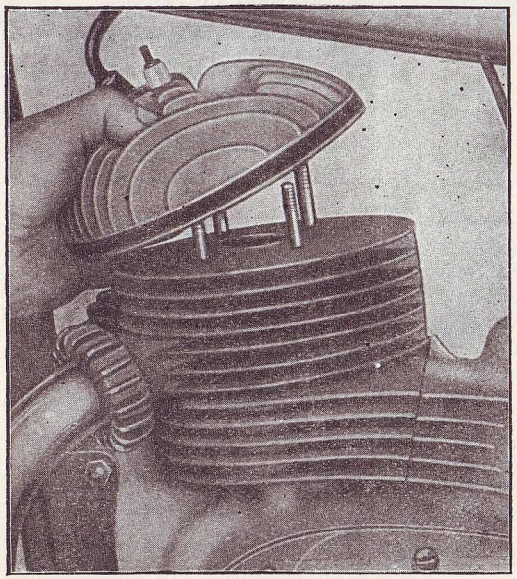


Fig. 45. Removing the cylinder head

6. REMOVING THE CYLINDER HEAD AND BARREL

Disconnect the fuel pipe from the fuel tank to the carburetter, unscrew the fuel tank rear fastening screw and slacken the front fastening screws.

Disconnect the sparking plug lead and lift the rear part of the fuel tank and prop it up. Disconnect the exhaust pipe (Fig. 44), slacken the four nuts holding the cylinder head to the cylinder barrel (Fig. 45) and remove the cylinder head. By means of the kickstarter bring the piston into the B. D. C. position and push the cylinder barrel upwards (Fig. 46).

Note: If the cylinder head is difficult to remove, carefully lever it by placing a screwdriver between the cylinder head and cylinder fin at the spot where the fins join. After the dismantling operation cover up the crankcase to prevent the penetration of dirt.

7. REPLACING THE PISTON RINGS

The piston rings should be replaced if the gap exceeds 0.031 in. (0.8 mm), the correct gap being 0.008 in. (0.2 mm). To check the gap width insert the removed piston ring into the cylinder top part to a depth of approx. 0.39 in. (10 mm).

The best way to remove the piston rings is to use three thin steel strips. Insert one strip under the piston ring ends (Fig. 47). To replace the piston ring proceed in the same manner.

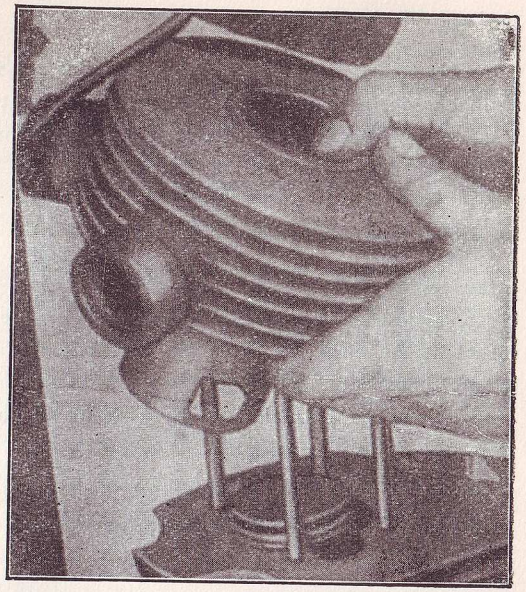


Fig. 46. Removing the cylinder barrel

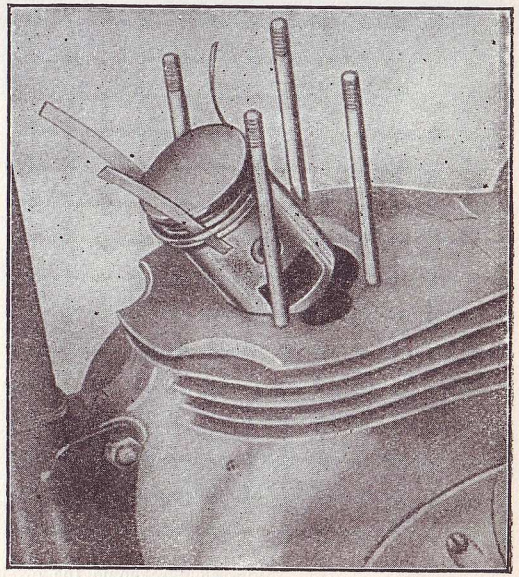


Fig. 47. Replacing the piston rings

8. REMOVING THE CARBURETTER

a) Disconnect the fuel pipe where it joins the fuel tank
b) Loosen the carburetter cover and disconnect the throttle cable
c) Remove the cover and slacken the clamp pinch bolt
d) Push the carburetter out rearwards

9. DISMANTLING THE CLUTCH

After removal of the L. H. crankcase cover (para 21) the clutch can be dismantled. To press in the cups which hold the lock pins use the double ended spanner # 10. Press in the cups one after the other and remove the pins in the same order (three times).
The clutch has five plates with cork inserts and four metal plates (plus one pressure plate).
When reassembling first insert the plate with a cork insert which was next to the pressure plate and thus exchange the plates.

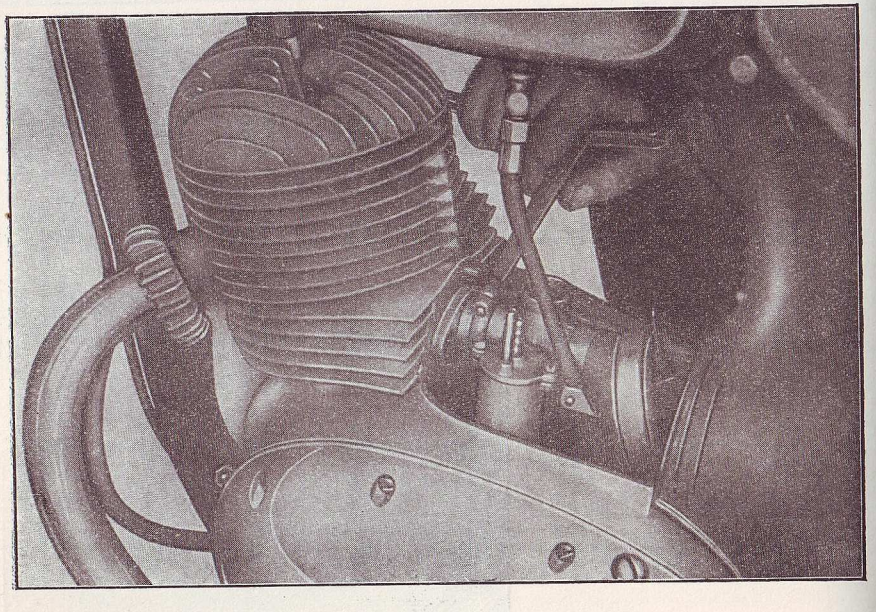


Fig. 48. Slackening the clamp pinch bolt

10. DISMANTLING THE HEADLAMP

The headlamp consists of three main parts: a rim with reflector and a bottom and top nacelle.
Remove the **rim with reflector** after unscrewing the securing screw M5 from the rim bottom, swing the rim upwards and disconnect the leads from the terminal. When filling the front fork with the damper liquid the leads need not be disconnected (Fig. 49).
Remove the headlamp **top nacelle** after unscrewing two nuts (# 7) and screw M 4×20 inside the nacelle, screw M 4×6 securing the top and bottom nacelle at the rear part of the headlamp and after unscrewing the speedometer drive union nut.
Remove the **bottom nacelle** after removing the handlebars (see para 12), disconnecting the leads and the clutch cable, unscrewing the steering head nut (# 41) and unscrewing the plug screws (# 32). Depress the front fork suspension. Hold the damper rod between the spring coils, using a spanner from the tool kit and unscrew the plug screws (# 32).
Having cleared the rod from the plug screws, secure it with a wire to prevent it from slipping into the fork tube. Remove the fork head lug and push the bottom nacelle out.

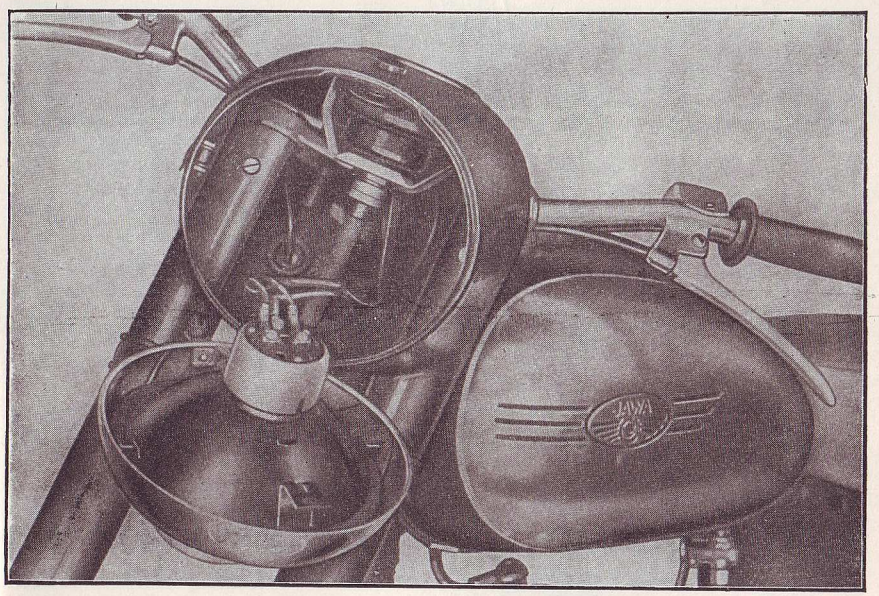
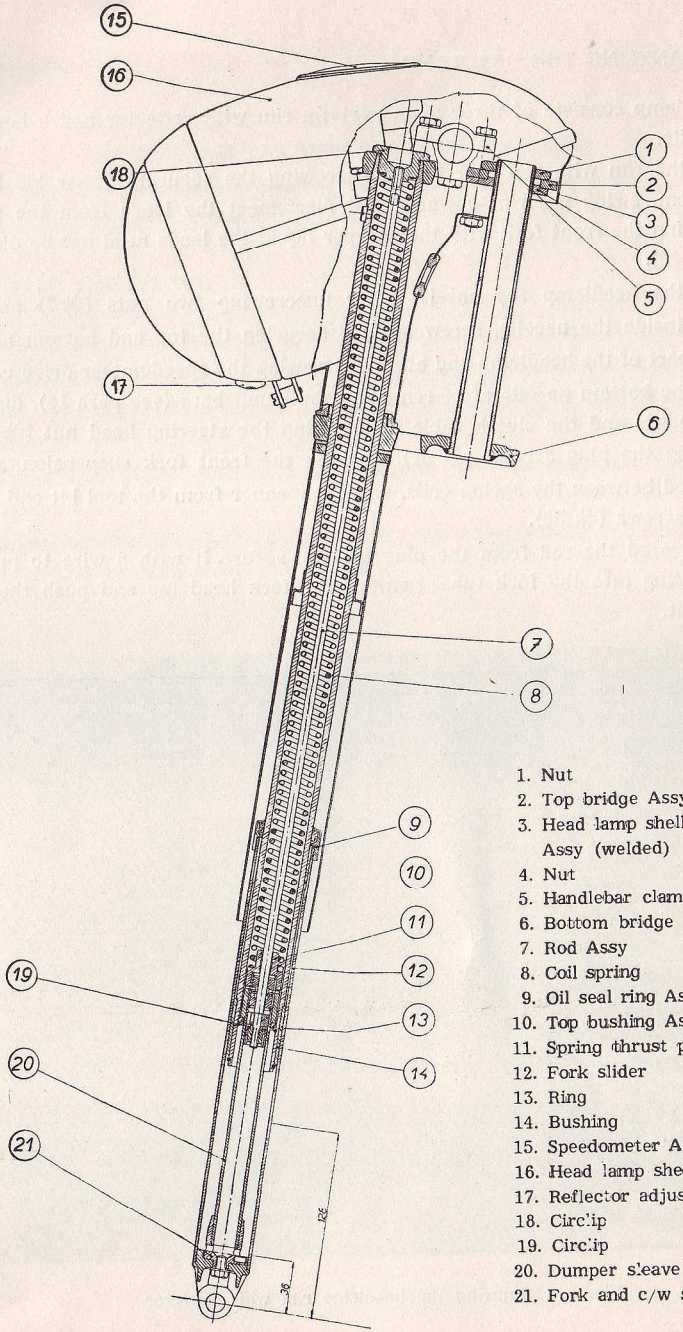


Fig. 49. Removing the headlamp rim whit reflector



1. Nut
2. Top bridge Assy
3. Head lamp shell bottom Assy (welded)
4. Nut
5. Handlebar clamp
6. Bottom bridge Assy
7. Rod Assy
8. Coil spring
9. Oil seal ring Assy
10. Top bushing Assy
11. Spring thrust plate
12. Fork slider
13. Ring
14. Bushing
15. Speedometer Assy
16. Head lamp shell top Assy
17. Reflector adjusting screw
18. Circlip
19. Circlip
20. Dumper sleave Assy
21. Fork and c/w spigot

Fig. 50. Front fork — sectional view

11. DISMANTLING THE STEERING HEAD

First remove the top nacelle and handlebars, screw out the nuts (# 41 and # 32) and release the fork head lug by means of tapping. By using a special box spanner partly unscrew the nut holding the bearing cup. In this manner it is possible to lubricate the top bearing balls (Fig. 52). Push the steering head column downwards, after which the bottom bearing can be lubricated (Fig. 53).

When completely dismantling the fork leg, unscrew the nut fully, unscrew the filler screws (M 6) from the fork leg tops and remove in turn the fork legs and the steering head column (naturally first remove both the front wheel and the front mudguard).

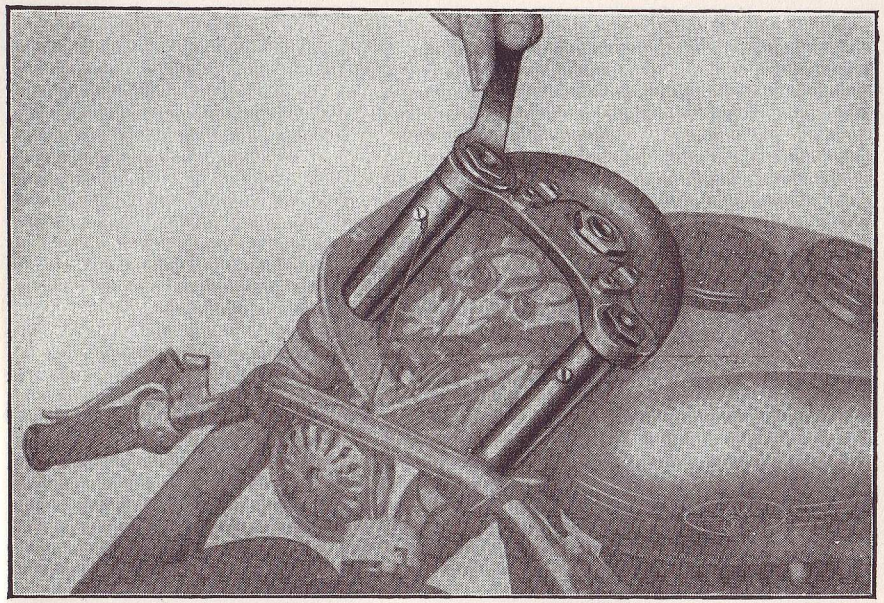


Fig. 51. Unscrewing the front fork plugs

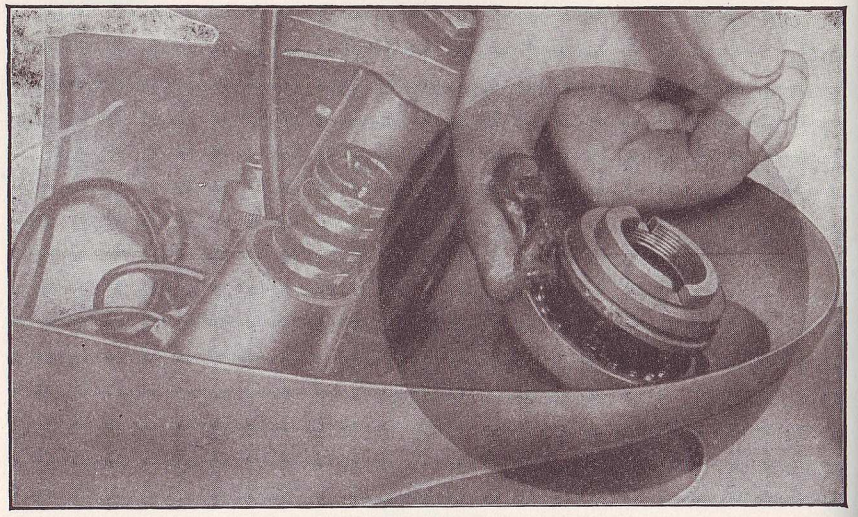


Fig. 52. Lubricating the steering head bearing balls

12. HANDLEBARS — TWIST GRIP

The handlebars are of the one piece type and are secured by means of a screw M 8×15 on the underside of the fork head lug. The handlebars are fastened by means of two clamps locked by four screws and two nuts M 8 (# 14). Four spring washers complete the set.

The handlebars can be removed after easing the headlamp rin with reflector (Fig. 49) and after removing the top nacelle (para 10), after slackening the clamp locking screws (Fig. 54). The twist grip can be pulled off after unscrewing the countersunk head screw through the opening in the rubber grip and plug. The twist grip rotation can be adjusted by means of the screw in the retention cap (Fig. 55).

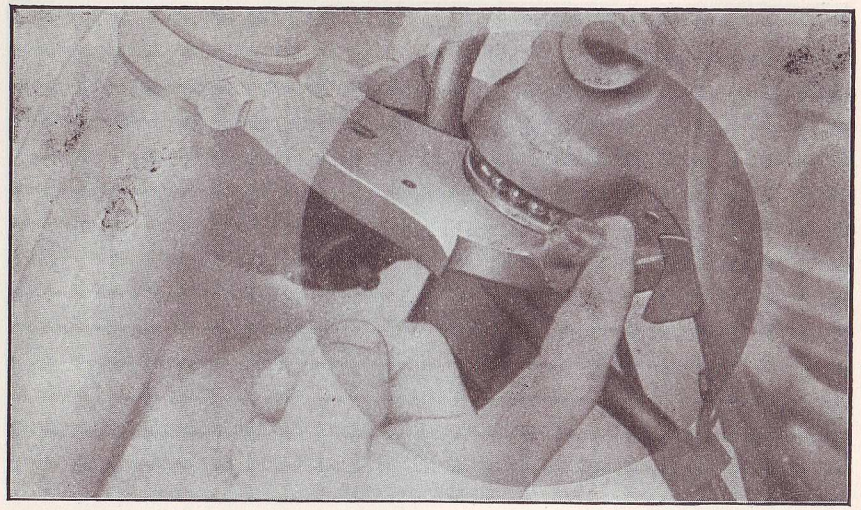


Fig. 53. Lubricating the steering head bearing balls

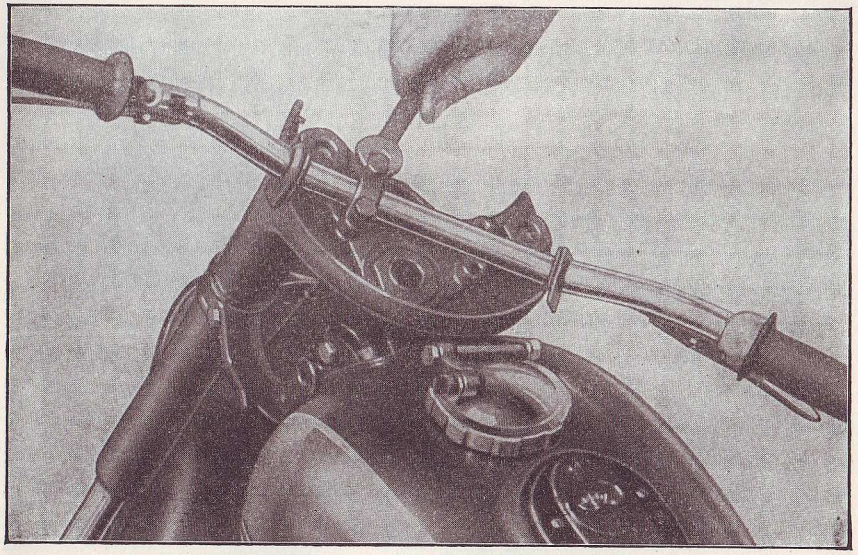


Fig. 54. Removing the handlebars

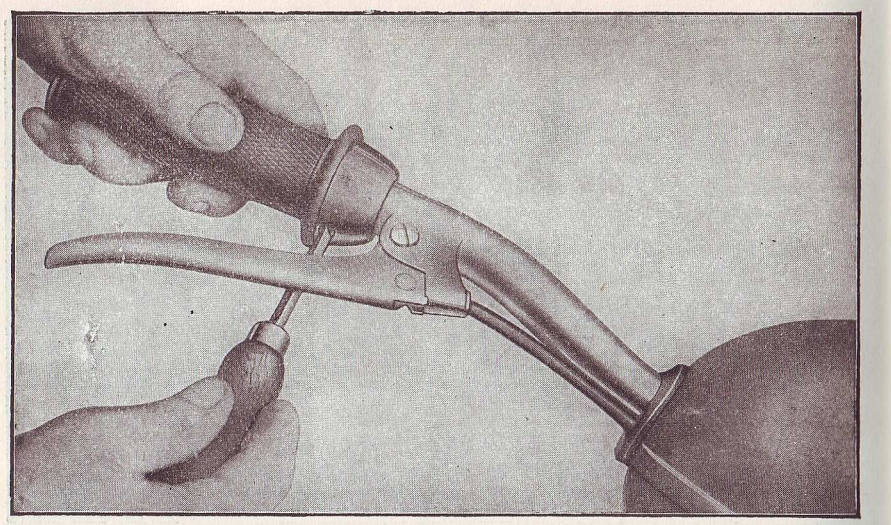


Fig. 55. Adjusting the twist grip

13. REMOVING THE DUAL SEAT

Slacken the screw M 6 through the cowl opening on the L. H. side (Fig. 56). Raise the front of the seat and by pulling it forwards and upwards remove it. An auxiliary tool box for the spare tube and spares is located underneath the seat.

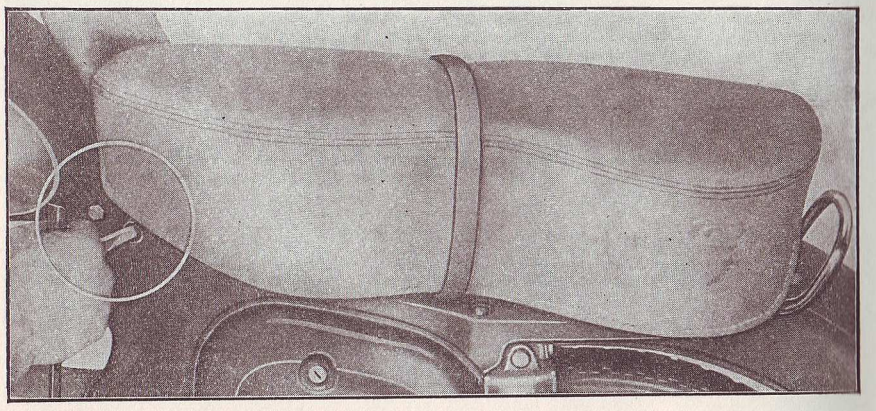


Fig. 56. Removing the dual seat

14. REMOVING THE FUEL TANK

Disconnect the fuel pipe, remove the twitch box (para 20) and disconnect the leads bearing labels with numbers. Unscrew two screws M 8×10 (# 14) securing the front clamp cars and the through bolt with nut (# 14/12) securing the rear clamp ears. Do not forget to replace the three spring washers when reassembling.

15. REMOVING THE COWLS

Unscrew the following parts from the R. H. side: nut (# 12) and through bolt (# 14) securing the fuel tank rear clamp ears, the screw (# 10) at the foot brake bracket and the screw M 4×8 from the pillion footrest bracket.

From the L. H. side: the screw (# 14) at the footrest bracket and the screw M 4×8 from the pillion footrest bracket.

Then unscrew two screws M 4×8 on the connecting seam behind the engine and remove carefully the cowl halves.

16. DISMANTLING THE REAR SUSPENSION

After unscrewing the M 8 screws fastening the damper unit to the frame and to the pivoted rear fork, remove the damper from the frame (Fig. 57) and fasten the bottom part of the damper cup in a vice. (Reference is further made to Fig. 58.)

Unscrew two screws (3) with washers (4) on the top lid (1) of the damper and remove the top cover (7). Screw in the lid eye (1) a holder of sorts (thread M 8) or in an emergency use a tommy bar or screwdriver and box spanner (# 10) and unscrew the nut (2). Secure the damper rod (5) by means of a steel needle placed in the fitting hole dia 3 mm and unscrew the lid (1). Note: on some models the fitting hole has been replaced by a cutting for spanner (# 10). Remove the needle (spanner) and the chromium plated bottom cover (9) together with the thrust washer (10) and spring (6).

Using the special hock spanner from the tool kit slacken the rod complete (damper body) setting the spanner in the bottom cutting in the body and unscrew it together with the damper column (11). Remove by repeated priming from the column (11) the remaining liquid from the space above the damper plunger.

Note: Due to a damaged sealing ring (8) the liquid will penetrate to the top, soil the rod (5) with oil and come out under the chromium plated top cover to the face of the damper. When replacing the sealing ring unscrew by means of the hook spanner the damper body and replace the sealing ring with a new one (dia 10/19×7). Screw the body halves together afterwards.

Remove all liquid from the cup (13), wash it in petrol and take care no dirt shall enter it.

Mix in a calibrated vessel 65 c. c. of damper liquid consisting of 39 c. c. damper oil and 26 c. c. paraffin (60 % damper oil + 40 % paraffin). Pour about 40 c. c. of the liquid into the cup. Insert the column (11) with the damper body into the cup and screw in by hand. Then prime with the rod (5) so long until on the upstroke of the rod a uniform resistance is felt along the entire stroke. Leave the rod (5) in its upper position and unscrew the body once more. Top up the cup (13) with the remainder of the liquid and screw in the body slightly (only two threads). Press the air out of the damping space by several primings and only then tighten the body fast using the hook spanner.

Check the damper for correct operation — on the upstroke of the rod a uniform resistance must be felt along the entire lenght of the stroke, on the downstroke the resistance is considerably less. When moving the rod swiftly upwards the damper must brake hard.

If the damper operates correctly, replace the bottom cover (9) with thrust washer (10) and spring (6). Set the needle (spanner) into the fitting hole in the rod (5) and by twisting the rod by means of the needle (spanner) guide the thread on the top end of the rod above the spring (6). Screw the lid (1) on, tighten it fast and secure with the nut (2).

Replace the top cover (7) and fasten it with the two fastening screws (3) not forgetting to replace the spring washers (4).

Replace the damper in the frame and tighten fast the M 8 screws (Fig. 59).

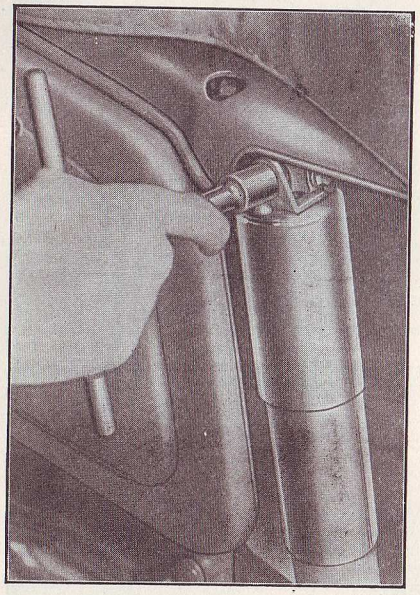


Fig. 57. Disconnecting the rear suspension damper bracket

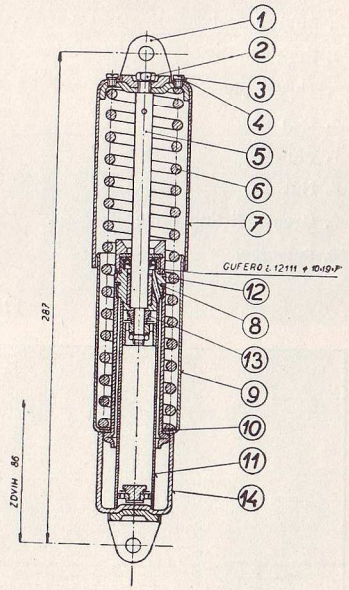


Fig. 58. Rear suspension damper — sectional view

1. Cover Assy
2. Nut
3. Bolt M 5×5
4. Washer, anti-rattle
5. Tie-rod Assy
6. Spring
7. Top sleeve
8. Oil seal ring
9. Bottom sleeve
10. Washer
11. Leg Assy
12. Screw M 6×6
13. Washer
14. Cup Assy

17. PIVOTED REAR FORK

Before removing the pivoted rear fork the following operations should be carried out: Remove the cowls (para 15), the rear suspension dampers (para 16), the rear wheel (para 2), the chaincase (para 3) and the rear chainwheel (para 4).

Then unscrew on the bush bottom the locking bolt with nut (Fig. 60) and the two nuts (# 17) on the L. H. side of the frame, thus releasing the stud. Push the released stud out to the R. H. side. Screw the extractor to the fork pin and push it out of the bush. After extracting the pin, screw out the screw (# 10) securing the inner section of the mudguard to the frame and after pulling the mudguard aside, remove the fork through the free space (Fig. 61).

1. Pivoted rear fork
2. Bushing
3. Rubber seal
4. Fork pin
5. Thrust plate
6. Cup
7. Pin
8. Nut
9. Grease fitting niple
10. Setscrew

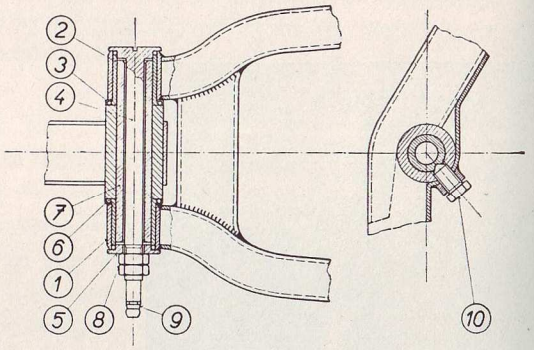


Fig. 59. Pivoted rear fork bushing — sectional view

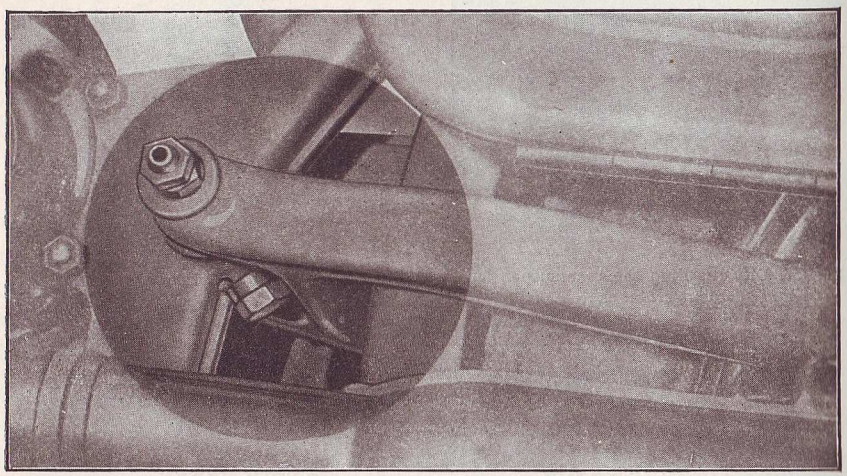


Fig. 60. Pivoted rear fork stud

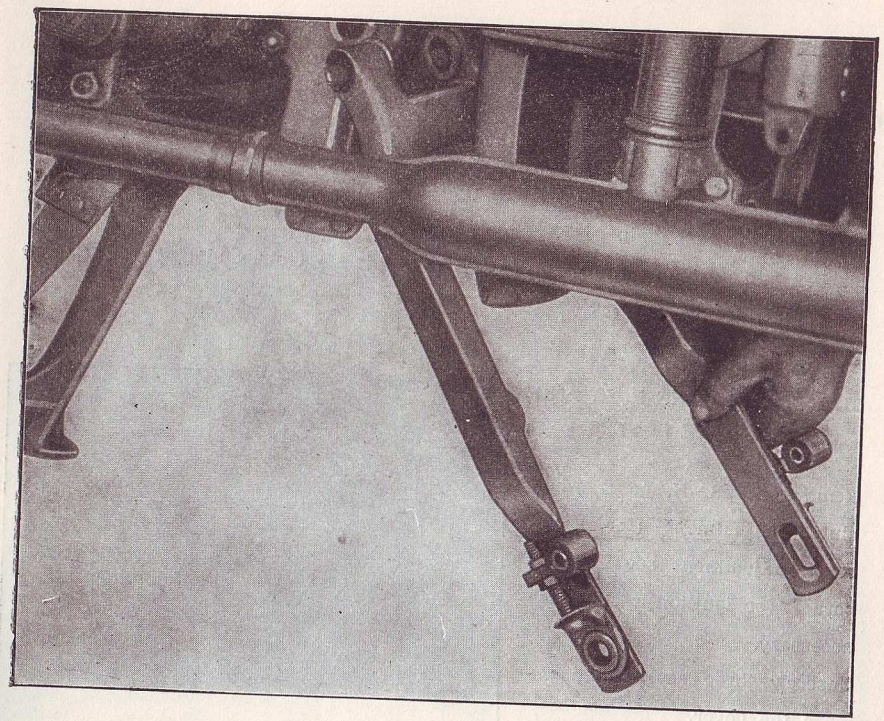


Fig. 61. Removing the pivoted rear fork

18. REMOVING THE BATTERY

Open the L. H. side box using the ignition key. (Insert the key in the lock, press the button right down and turn it to the right or left. The pressed mark in at the top when the box is open.)

Remove the fuse case from its holder (Fig. 28), thus disconnecting one lead, and disconnect the other lead (+ pole — frame) by unscrewing the nut (# 10) and pushing the washer off the earthing screw. Pull down the securing strap and remove the battery (Fig. 62).

19. DISMANTLING THE SWITCH BOX

After unscrewing three M 4 screws and disconnecting the numbered leads remove the switch box.

20. REMOVING THE ENGINE FROM THE FRAME

Disconnect: (the fuel pipe, throttle and clutch cables to the engine), speedometer drive, the sparking plug leads and the switch box leads.

Remove: the chaincase (rear wheel), the cowls, the exhaust, the R. H. crankcase cover and the fuel tank.

Slacken and push out the engine plate bolts (# 14) front and rear and remove the engine.

21. REMOVING THE R. H. AND L. H. ENGINE COVERS

Remove the R. H. cover when clutch adjustment (for thourough adjustment see Part II, para 6 (or ignition setting are necessary.

Unscrew three screws and remove the cover.

Remove the L. H. cover when it is necessary to dismantle the clutch (to replace the clutch plates) or the primary chain. Drain the oil (Fig. 15), slacken the screw securing the gear and kickstarter lever, remove the lever from the shaft by means of tapping, slacken the 7 securing screws and remove the cover by carefully levering with two screwdrivers placed in the openings in the front and rear part of the cover.

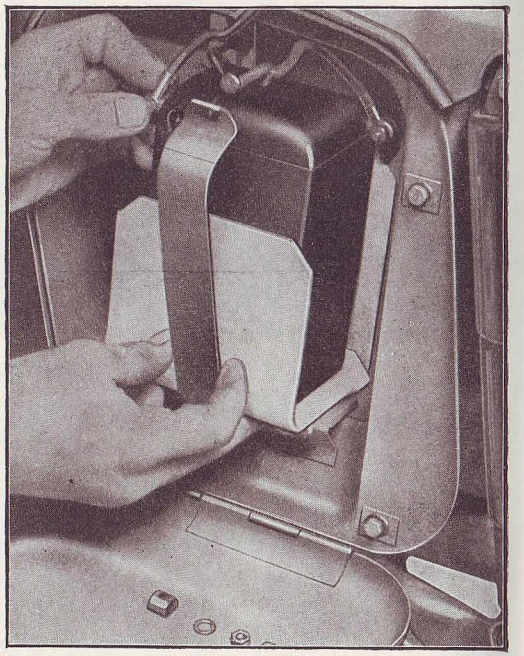


Fig. 62. Removing the battery

IV. DEFECTS, CAUSES AND RECTIFICATION

Defect			Cause	Rectification
Lumpy running	Engine knocks		Engine overheated.	Stop until engine has cooled: do not run at high revolutions.
			Plug points glow, faulty sparking plug (unsuitable).	Replace sparking plug.
			Cylinder head clogged with carbon.	Remove head and decarbonise.
			Over-advanced ignition.	Adjust correct gap by rotating breaker base plate to required position.
			Exhaust silencer clogged with carbon (depressed exhaust pipe).	Detach exhaust silencer and decarbonise (straighten the pipe).
	Engine misfires	Regular sparking	Water or oil in carburetter.	Clean carburetter.
			Insufficient fuel supply.	Open reserve supply tap, pass fuel over, re-fuel, inspect inlet manifolds, clean breathing hole.
			Temporary short circuiting. caused by faulty plug lead.	Tape crack in insulation or replace lead.
			Weak mixture.	Clean jet — adjust carburetter.
			Improperly mixed petroil.	Stir mixture properly before refuelling.
		Irregular sparking	Unsuitable sparking plug.	Replace sparking plug.
			Oiled sparking plug.	Remove and clean sparking plug.
			Excessive spark gap.	Adjust correct gap to 0,5 mm (0,019 in.) by bending outer point.
			Dirty breaker points.	Clean points using cloth soaked in petrol.
			Burnt breaker points.	File with fine file.
			Improperly adjusted breaker points.	Adjust correct gap to 0,4 mm.
			Faulty condenser, engine runs regularly at low revolutions only, excessive sparking between breaker points.	Replace condenser.
			Temporary short circuiting caused by faulty lead.	Tape crack in insulation or replace lead.

Defect			Cause	Rectification
Engine will not fire. Engine has stopped. Carburetter can be flooded.	Compression regular.	Sparking regular.	Carburetter is in order.	
			Engine overheated.	Allow engine to cool, run at low revolutions.
			Insufficient lubrication.	Take care that petroils is mixed properly in ratio 24 to 1.
			Throttle cable broken or loose.	Adjust or replace cable.
			Air leak between carburatter and cylinder.	Replace gasket or tighten mounting flange.
Engine lacks power (does not pull)			Carburetter faulty	
			Choked jet.	Remove and clean jet.
			Leaking float.	Replace float or repair.
			Float stuck.	Loosen float.
			Float needle does not seat properly.	Repair or replace faulty needle.
			Permanent occurence	
			Carbon accumulation in cylinder, head, exhaust and silencers.	Remove head, barrel, exhaust pipes and decarbonise.
			Partly clogged fuel feed.	Remove and clean fuel pipe.
			Improperly set timing.	Adjust breaker point gap and ignition advance.
			Improper carburetter setting. (Faulty mixture).	Adjust idling speed, needle position and clean air filter.
			Throttle valve stuck.	Loosen throttle valve and adjust to open fully.
			Exhaust silencers clogged.	Dismantle and decarbonise.
			Worn cylinder interior and piston.	Rebore cylinder, replace piston, have piston bearing checked, etc. (authorized workshop).
			Air leak in crankcase or carburetter mounting flange.	Take both crankcase halves apart, clean joint faces, apply jointing compound and reassemble properly. Replace carburetter mounting flange gasket.
			Worn cylinder head gasket.	Replace gasket.
			Brake shoes rub drums.	Adjust brakes.
			Fuel supply or cleaner partly clogged.	Clean supply passages or cleaner.
			Temporary occurrence	
			Throttle cable sticks.	Lubricate or replace.
			Engine overheated.	Allow engine to cool and keep at low revolutions.
			Faulty sparking plug.	Replace sparking plug.

Defect				Cause	Rectification
Engine will not fire — Engine has stopped.	Carburetter can be flooded.	Carburetter cannot be flooded		Empty fuel tank.	Transfer fuel reserve (sufficient for about 20 miles 30 km), refuel as soon as possible.
				Petrol tap closed or not sufficiently opened.	Open tap.
				Filter above tap clogged.	Unscrew fuel tap and clean filter.
				Clogged pipe or carburetter screen.	Remove piping and blow through it, take out carburetter, clean screen and jet.
				Fuel tank breathing hole clogged.	Clean breathing hole.
		Irregular sparking.	Spark at lead end	Oiled sparking plug.	Remove plug and clean it.
				Damaged plug insulation.	Replace plug.
				Short circuiting between sparking plug points.	Adjust sparking plug gap to 0,5 mm (0,019 in.).
				Plug points gap too wide.	Adjust gap to 0.5 mm (0,019 in.).
			No spark at lead end.	Ignition coil faulty.	Replace ignition coil.
				Dirty breaker points.	Clean using a cloth soaked in petrol.
				Burnt breaker points.	File using a fine file.
				Faulty breaker points.	Repair or replace.
				H. T. lead broken or loose.	Tape insultation crack, replace as soon as possible.
				Burnt lead insulation.	Tape crack and replace lead at the earliest convenience.
				Faulty condenser.	Replace.
				Damaged stator winding insulation.	Rely on an authorized workshop.
				Water in contact breaker.	Blow out water, wipe off carefully allow to dry.
		Regular sparking	Poor compression	Faulty bakelite lead terminal.	Replace terminal.
				Broken piston ring.	Remove and replace piston ring.
				Jammed piston ring.	Remove ring and either clean and replace, or fit a new one.
				Sparking plug washer leaky.	Replace washer.
				Cylinder head gasket faulty.	Replace gasket.
				Jammed piston.	Remove and repair (authorized workshop).

TWO STROKE ENGINE OPERATION.

The two stroke petrol engine is particularly suitable for motor-cycles. Having few moving parts it is subjected to less wear and consequently is more reliable in operation. The working action of a two stroke engine is accomplished in a single crankshaft revolution (i. e. two piston strokes).

1. Piston moves upwards:

The piston closes first the transfer ports, then the exhaust port and causes compression of the mixture in the compression space of the cylinder head. A few moments before the piston reaches its T. D. C. position the compressed mixture is ignited by the electric spark from the sparking plug.
In the meantime a vacuum (underpressure) is created underneath the piston, causing induction of fresh mixture from the carburetter to the interior of the crankcase.

2. Piston moves downwards:

After ignition of the mixture the actual **working stroke** of the piston begins (transmitting the power of the expanding gases by means of the crankshaft mechanism and transmission to the motor-cycle rear wheel). The top edge of the piston opens first the exhaust port and the exhaust of the burnt gases takes place. The top edge and the piston lights then open the two transfer ports. Under the piston and in the interior of the crankcase there is fresh mixture, compressed by the piston during its downward stroke. Through open transfer ports this fresh mixture now flows into the **cylinder, directed by the shape of the port**: the two streams meet, reach the opposite cylinder and proceed towards the cylinder head which directs them to the exhaust ports side. The fresh mixture fills the cylinder and at the same time presses the remaining burnt mixture out (scavenging).

LIST OF TOOLS

Combined spanner 32/31 tub.	Cloth
Adjustable spanner	Double ended spanner 5,5/7
Double screwdriver	Double ended spanner 9/10
Screwdriver 8 mm	Double ended spanner 11/12
Flat spanner, single # 45	Double ended spanner 14/17
Handle	Double ended spanner 19/22
Hook spanner	Handle
Tyre lever	Grease gun
Contact breaker spanner	Tyre inflator
Canvas tool kit	Inflator connection
Combination pliers	Safety lock with 2 keys

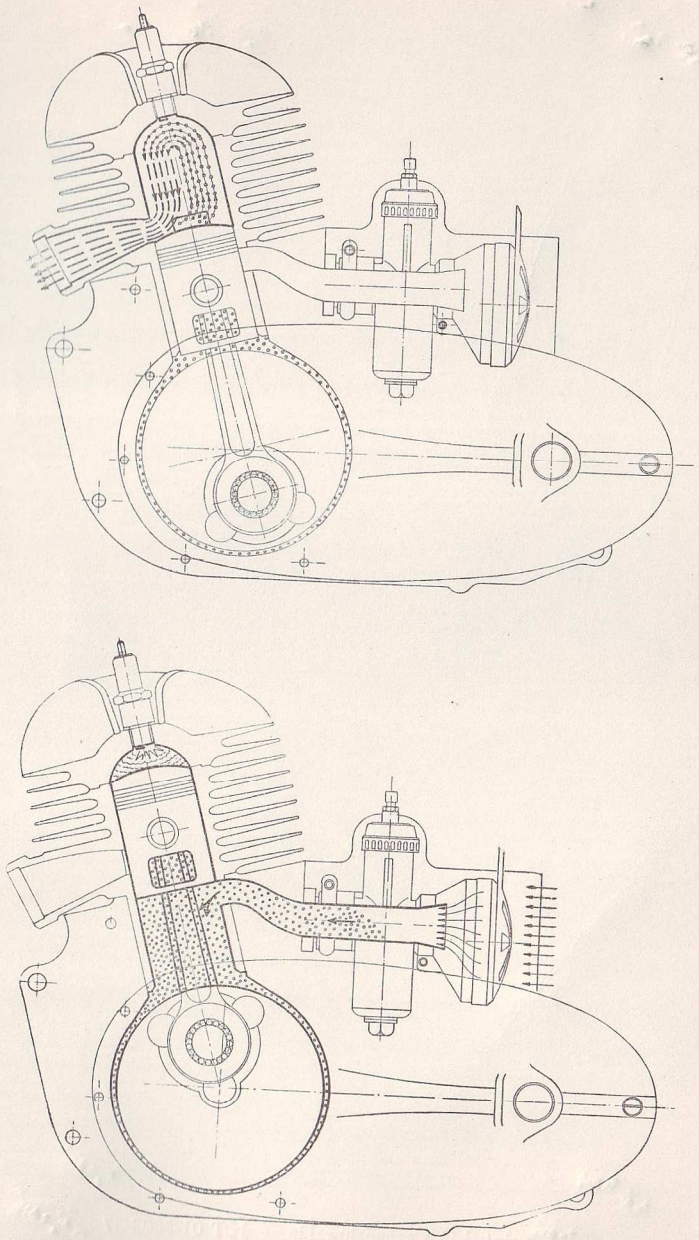


Fig. 63, 64. Two stroke engine operation diagram

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